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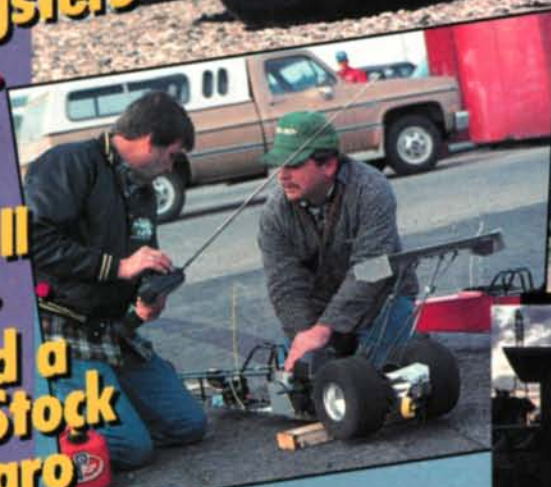


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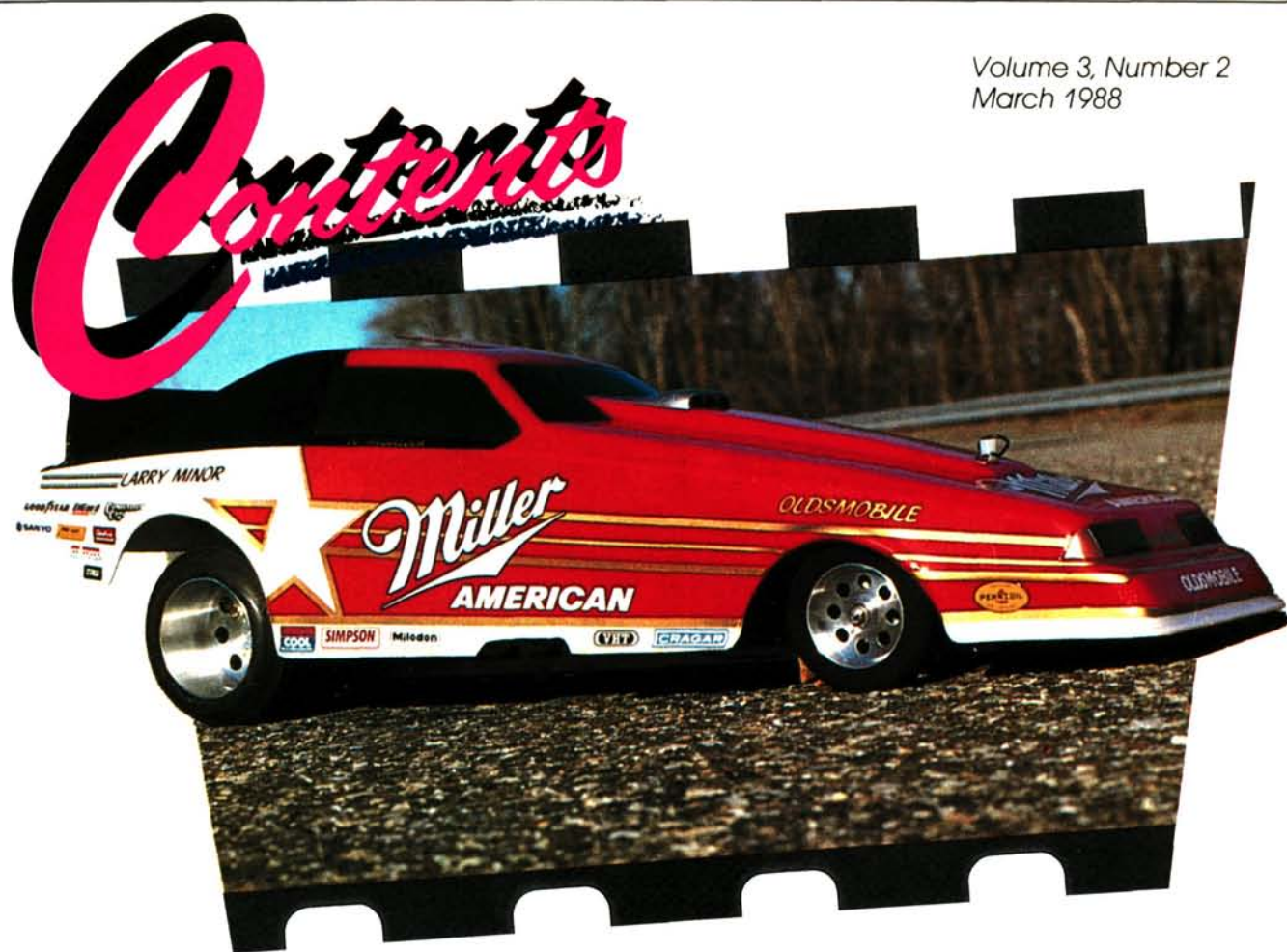
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EDITORIAL

by LOUIS V. DeFRANCESCO JR.

DON "THE SNAKE" PRUDHOMME, Shirley "Cha-Cha" Muldowney, Bill "Grumpy" Jenkins, Don "Swamp Rat" Garlits, Mickey Thompson, Sox & Martin... What do these names mean? Drag racing! At one time or another these greats were making drag-racing history and bringing the sport into the public eye. The mere mention of these names conjures up images of flame burnouts and spellbinding speeds down the harrowing quarter-mile strip. As with many other facets of auto racing, i.e., stock cars, off-roaders, sprint cars, monster trucks, etc., drag racing has now found its way into the radio-control hobby.

Already, we're seeing everything from 1/12-scale funny cars powered by hot electric motors, to 1/4-scale dragsters powered by chainsaw engines and nitrous oxide setups! Manufacturers are already scrambling to get new drag products into the R/C marketplace. Companies like Hedman and Mickey Thompson, who have for so long been synonymous with full-scale drag racing aftermarket products, are now producing one for the R/C market!

So, enter our special drag issue! We've tried to give you a broad sampling of what's been happening, including some of the newest and hottest R/C dragsters and funny cars.

Also gaining momentum is 1/4-scale oval-track racing, and we sent our correspondent-at-large, Rich Hemstreet, to cover the 1/4-scale Supnationals hosted by the King 8 Hotel and Casino in Las Vegas. The racing was spectacular, and wait until you see the cars!

Many of you commented on the ballot for "Car of the Year" we placed on page 144 in the last issue. We want you, the reader, to vote for the car of the year, and any radio-control car is fair game. Just fill out the ballot and send it to us. Simple! We have extended the contest deadline and have included another ballot in this issue (Page 119). The winning car will be featured in our next special newsstand publication, the *Radio Control Car Action Yearbook*. It will be available on the newsstands and in the hobby shops this spring, so keep an eye out for it.

We've put together another great magazine for you, and this is our first monthly issue, so hold on to your radios because we've got some wild stuff in store for you!



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Letters



Wo Kann Ich Bekommen...?

In a past issue of *Radio Control Car Action*, I read about the self-made '32 Ford Deuce hot rod. This fantastically scaled car was built by Gary Conley and is powered by a fully supercharged, water-cooled, mini-V8 engine. How can I contact Gary Conley to ask him for drawings or photographs of his V8 engine? I'd also like some information on his V8, as I build and collect small engines and have never seen a more beautiful engine.

PETER MAHLBERG
West Germany

Peter, that same engine is now available from Gary Conley in a rough casting kit. The kit includes 95 percent of the required metal, and requires a milling machine and a lathe to transform it into a functional engine. For more information contact: G.L. Conley Engines, Inc., 825 Duane, Glen Ellyn, IL 60137. CC

Sour Grapes

I've got an RC 10 and I'm pretty ticked off that the Ultima won the IFMAR World Championships. I would like to see which car is better, the Ultima or the RC 10. Let's have a shootout!

BRANDON BORN
Berkeley Heights, NJ

Brandon, although the RC 10 fell from grace during the World Championships, don't count it out. Keep an eye out for the RC 10 versus Ultima shootout featuring both cars in supermodified drag. CC

Hot Stuff

I think you've got the best magazine around. I'm 14 years old and am the proud owner of an RC 10. I recently fried my Trinity stock motor using a 19-44 gear ratio. I now realize that this was a big mistake, so could you suggest a gear ratio that won't kill another motor or run down a battery pack too

fast. Also, could you please send me some of those good-looking decals with your logo on it? Thanks.

PAUL STEINPOR
Grand Rapids, MI

Paul, if I read your letter correctly, you stated that you were running a 19-tooth pinion on a 44-tooth spur gear. No wonder you fried your motor! There may have been other elements that contribute to this meltdown, but that combination far too low for the RC 10. The standard gears on the RC 10 are usually a 14- and 15-tooth pinion and a 54-tooth spur gear. That translates to an overall gear ratio (the differential has a 1.83 ratio) of 5.69:1 or 5.43:1 respectively. With your combination the overall ratio is 4.15:1. This will put a heavy load on the motor as well as drain your batteries quite quickly. It's best to stick with the standard 54-tooth spur gear and go up two or three teeth on the pinion gear. This will keep your motor in one piece and your batteries may last longer than before! P.S. We have received quite a few letters about the decals and we decided to do something about it. You'll find the ad to order Car Action stickers in the magazine. CC

What's the Problem?

I would like to know why I'm getting only 4 minutes on my stock RC 10. Is there anything I can check for that will increase my running time? Also, I have a Futaba Attack radio with my car and somehow the polarity changed. I have to push down to make the car go forward. Is there any way to change the polarity?

JOSEPH GISI
Eastchester, NY

Joseph, there are many things that may contribute to a shorter than normal run time. First, check your car to see that the gap between the pinion and spur gear is correct, the differential is not binding, and

(Continued on page 10)

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Letters

(Continued from page 8)

If the car was assembled according to instructions, the problem lies elsewhere. Check the charger to see that it operates properly, and check the battery to see if it's taking full charge. Second, assuming you're using the stock resistor speed control, check to see that you have assembled it according to the instructions and that the servo is moving in the right direction. If everything checks out, check the polarity of the motor. This is where your problem may lie. If this is the case, simply switch the wires around and you'll be headed in the right direction.

CC

All Wet

I picked up my first issue of *Radio Control Car Action* and have enjoyed reading it. Your magazine has made me question my purchase of the Radio Shack Golden Eagle frame buggy. In one of the photos I noticed a car running in water. How do you go about making your vehicle waterproof?

DAVID JAMISON
Buffalo, NY

David, I can't judge whether or not it was a mistake buying the Golden Eagle buggy because I haven't had the opportunity to run one. Based on the mail we've received, most of the cars purchased through a discount or department store are a disappointment when compared to the cars that have graced the pages of *Radio Control Car Action*. To address your question, there are a few ways to waterproof your radio system. One of the most popular methods, similar to the method used for boats, is to wrap the receiver, and the speed controller if possible, in a plastic bag or rubber balloon, seal it around the wires with a dab of silicone, then seal it with a rubber band. If your car uses a resistor-type speed control with the ceramic resistor attached to the speed control, it can't be sealed because of the heat it generates. Waterproofing your radio system is a good idea if you happen to run through a puddle accidentally, but I

recommend staying out of the water altogether.

CC

Optima Fever

I just got back from the Chicago Model and Hobby show. It was awesome! I had a chance to meet Joel Johnson, an editor of *Radio Control Car Action*, and Louis DeFrancesco gave me the new 1988 Buyer's Guide. I like it a lot. I have a modified Grasshopper and am hoping to get the Optima. Do you know where the stores will be selling the mid-engine Optima? Also, is there a way I can put wide, off-road tires on the front of my Grasshopper like they do on the 4WL cars? Keep up the good work.

SCOTT SAMMON
Oak Brook, IL

I am an R/C car enthusiast and would like to purchase an R/C car. I was wondering about the new Kyosho mid-engine, prototype Optima with be drive. When will this car be available?

ANDREW WAGNER
Pulaski, W

I'm glad you liked the Buyer's Guide so much. The mid-engine Optima should be available by the time you read this. I hold you over until you get one, you can put wide wheels on the front of your Grasshopper by using a pair of Tamiya No. SP 1156 wheels. These wheels are original equipment on the Tamiya Subaru Brat and are wide enough to accommodate the wide, off-road tires.

CC

Monster Mania

I am an avid reader of *Radio Control Car Action*. I own three Monster Trucks and wonder when you will have a Monster Truck showdown.

KEVIN AMBROSIO
Redding, CA

I just got the December issue of *Radio Control Car Action*. Thanks to Steve Pond, my MRC Monster Beetle is the

(Continued on page 16)



The Inside Scoop

by STEVE POND

THE R/C CAR industry is rapidly advancing, with new products being offered at a head-spinning rate. So, I'll make manufacturers nervous, but feed you R/C squirrels who are hungry for info, by bringing you a special report on security leaks and "late-in" items. Here goes!



DWA 1/4-SCALE CARS.

RECENT ARRIVAL from overseas is this photo sent to us from DWA Model of Italy. DWA tells us that 1/4-scale racing is really growing in popularity there. They already manufacture a 1/4-scale gas-powered motorcycle that's available there through RPS Distributing, and the 1/4-scale cars you see here are also from DWA. The two sprint-type cars are from RACO. It's not yet known when these DWA cars will be available in the States, but you'll be the second to know.

* * *



OUTLAW CHASSIS'S 1/4-SCALE SPRINT CAR.

OUTLAW CHASSIS of Longview, Texas, a manufacturer of full-scale sprint, modified, midget, and mini sprint cars, has just

introduced a 1/4-scale sprint car which incorporates all the same features as their full-scale cars. Features include a 4130 chrome moly frame with clean, superstrong heliarc welds, adjustable slider rear end, a Jacob's ladder that will mount left or right for pavement or dirt, aircraft-quality aluminum parts, an all-new wedge hood that eliminates the need for a front wing, and the list goes on. Keep an eye open for more information.

* * *

JUST IN FROM Trinity. Mike Given, the top qualifier in Atlanta, is now on the east coast heading Trinity's R&D. In addition, Jim Deiter and Mike Dean will soon become members of the formidable Trinity/Kyosho Racing Team.

* * *

HOT OFF THE PRESS from our friends in the land of the rising sun. Sources have informed us that MRC/Tamiya will be introducing a new 1/12-scale monster truck called the Midnight Pumpkin. The chassis is reported to be similar to that of the Lunch Box and it's covered with a vintage 1956 Ford pick-up body. Details are still few, but keep your eyes open for more information on this monster in future issues.

* * *

by a fire-breathing O.S. CZ-engine (usually not included). It also looks as though, along with the refined chassis, this is an all-new, low-friction belt-drive system connecting the differentials.

* * *

FUTURA DESIGN of New Hampshire has just released a 1/8-scale snowmobile conversion for the Associated RC 250 Club Racer. Another late-breaking item from the "Granite State" is a rumor that Futura Design



KYOSHO'S STINGER MK.II.

RUMORS HAVE BEEN heard about a top-secret Kyosho Turbo Ultima. Leave it to the minds that brought you the new 2WD World Champion to go one better with a Turbo Ultima. Not too many details yet but, as usual, we'll tighten the thumbscrews a little more to bring you the info first! Another item from Kyosho: On its way across the Pacific is a new Stinger Mk.II gas-powered, 4WD off-road car. The car looks as though it could be powered

is also working on a 1/4-scale project believed to be an '88 Corvette.

* * *

NEW DOMINATOR 2WD. Sources have informed us at RCCA that Custom Works, the manufacturer of the race-proven Dominator 4WD car has introduced a new 2WD version that promises to be a lightning-quick as the original car.

* * *

MOTOR

MAGIC



by TOM AUMENT

SINCE THE LAST installment of "Motor Magic" many people have written with questions about rebuilding modified motors. I have to say don't do it yourself!

You have two available smart choices. You could send your motor back to the manufacturer. Alternatively, there are two rebuilding programs which I recommend. Trinity* has a great rebuilding program for Kyosho-based motors and Parma* rebuilds Yokomo motors.

If you don't own a jeweler's lathe, a magnet zapper, and an \$8,000 to \$23,000 dynamic balancer, let the pros do it. Good modified motors are precision-built.



"Mr. Motor" himself, Mike Reedy, at the helm of some of the high-tech equipment that is needed to build a competitive stock or modified motor.

Now, rewinding services. Don't send in your armature to have it unwound and rewind. All the modified motor manufacturers offer armatures for sale through your local hobby shop but they do *not* service them.

Some time ago, I sent an armature to a rewinding service that I'd seen an ad for. As I'm a motor builder I really had to find out for myself if all the extravagant claims they made were true. I found that they weren't! When my armature came back it had the wrong turns, was out of balance, and the wires were soldered to the commutator instead of welded or fused. Further, the armature was not epoxied. I definitely advise you to do yourself a favor and buy a ready-built replacement armature.

I'm also often asked how to get stock motors to run faster. First, start with a good stock motor, and you can then use some little tricks. Cut-timed brushes will advance your timing on an average motor, and you can also use Turbo-Drops from Trinity or Power Plus from BoLink*. Don't use these products on modified

motors; they should only be used for stock motors.

If you have a lot of torque and no top-end, use a lighter spring and you'll increase your motor's rpms. Keep your motor clean and make sure that you lube the bushings with an oil made especially for bushings. I recommend Paragon Dry Lube*.

You should also take a look at the brushes in your motor. If they are worn or discolored, replace them. Make sure that you break in your new brushes *before* you run your car. (Refer to Part 1 of "Motor Magic" in the December, '87 issue of *Radio Control Car Action*).

If you have any questions I'll be happy to answer them.

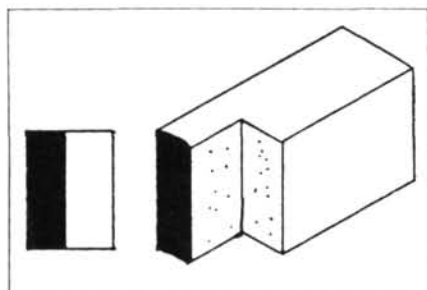
**The following are the addresses of the companies mentioned in this article:*

Trinity, 1901 East Linden #20, Linden, NJ 07036.

Parma, 13927 Progress Parkway, North Royalton, OH 44133.

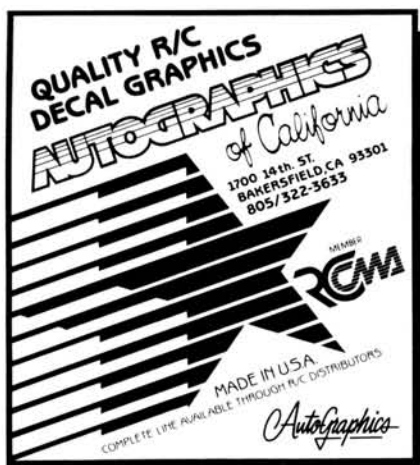
BoLink, 420 Hosea Rd., Lawrenceville, GA 30245.

Paragon Racing Products, 8802 Knollwood Drive, Eden Prairie, MN 55344. ■



"Timed" brushes for your stock motor will give you a little extra timing and performance.

To rebuild the motor properly, the whole motor must first be sonically cleaned and then disassembled. The bearings must be checked for alignment, and the armature checked for shorts. If the armature checks out, the rebuilder cuts the commutator and dynamically balances the armature. The motor is then assembled and properly shimmed. The brush hoods are then checked for proper alignment and the spring tension set. Finally, the brushes are broken in and the motor timed.



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Letters

(Continued from page 10)

top car-crusher on the block!

BERNIE SCHMITT

Glen Ellyn, IL

I want to get an MRC Monster Beetle for off-road riding that I can also race. If I get the Monster Beetle, can I remove the off-road tires and put racing tires on it?

BRIAN O'HARA

Mattydale, NY

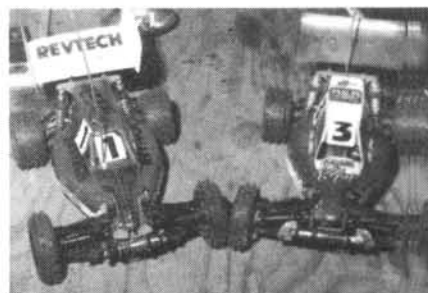
Kevin, it seems as though you have been bitten by the "Monster" bug. We featured a Monster Truck shootout in the June 1987 issue of Radio Control Car Action that featured the Big Bear, Blackfoot, and Big Grizzly. Since then, a few more trucks have popped up. Although we don't see another shootout in the near future, check out the Monster Truck Special in RCCA's May issue. Brian, when you say you want to race your Monster Beetle, I am assuming that you want to put standard size tires on it. This is possible, but the gear ratio used in the Monster Beetle is very high to compensate for the larger tires. By changing to a smaller tire, the speed will drop considerably. The proper method of setting up your Monster Beetle for smaller tires is as follows: Remove the motor from the rear end assembly and change the long 11-tooth pinion to a standard 18-tooth pinion. Before fastening the new pinion to the motor, remove the K-2 spacer. This spacer is no longer needed unless you want to change back to the larger tires. Once the pinion gear is attached, fasten the motor back onto the rear end with 27mm screws instead of the 30mm screws that were originally used. If the 30mm screws are used, they may stick too far into the motor and cause serious damage to the armature. Get ready to tear up the track!

CC

The Cat's Out of the Bag

Hey guys, the car at the bottom of page 65 of your December 1987 issue isn't a Schumacher Cat! It's a 2WD scratch-built. It has an MIP rear suspension with graphite arms, RC 10 front suspension,

possibly part Ultima up front. Notice the front shock tower. Where in Connecticut is your test track? The guys I race with in the Massachusetts/Connecticut area are willing to travel to well-surfaced,



Ryan, here is a look at a pair of the elusive "Cats."

well-organized, competitive tracks. I'll be back in Connecticut to race if I hear of a good club—so will others. Great magazine and keep up the great work!

RYAN ARCHAMBAULT

Prescott, Arizona

Ryan, you're right; sorry we goofed. Thank you for your keen eye. We just wanted to see if you were on your toes—HA! Concerning Connecticut racing, keep an eye on the Track Directory in the back of the mag for track information. I'm sure the guys and gals from the B.O.R.R.A. club in Bethel, Connecticut (where we do some of the testing), would welcome some new blood.

CC

Project Hornet?

Project Frog and Grasshopper were great. I have recently purchased a Hornet and was wondering if you could print a Project Hornet.

MIKE LINDOW

Saginaw, MI

The Hornet is the big brother of the Grasshopper, if you refer to this issue's "Troubleshooting" and combine it with Project Grasshopper, you should be able to really sting the competition.

FM

Race Strategy

by RICH HEMSTREET

There Are No Points For Second Place



The lead car has the advantage going through any turn.

RACING STRATEGY is really quite simple. You have to be the first one across the finish line to win, and the only way to do that is to be in the lead at the end. What if you don't win? Usually, second place and last place mean about the same—nothing! So, go for the victory!

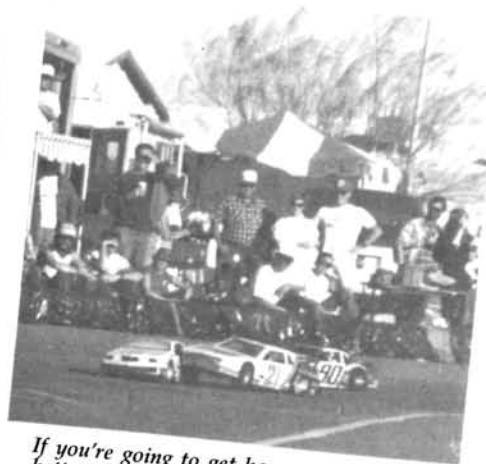
Am I promoting winning at all costs? No way! There's never any place in racing for cheating or driving dirty. Any racer found using illegal equipment should be disqualified immediately. Also, any car that sets a TQ time in any round at a national event should be inspected before it leaves the track area. This would ensure that every TQ used a legal car.

As for dirty driving, the race officials must always disqualify any driver who purposely runs into another car. While this is a judgment call, it's one that's not made often enough.

How can you learn how to win races?; only by racing against others. While all practice time is helpful, actual racing is the most productive practice.

I've often heard—and always rejected—the following two pieces of advice. The first is that you should avoid wheel-to-wheel racing in heat races. The advice goes that since you're trying for the best lap total in a given time, you shouldn't risk losing time in accidents with other cars. However, by avoiding wheel-to-wheel racing in the heats, you lose valuable driving experience. Also, if you're not supposed to race against another driver, who is supposed to back off first? The best way to prepare for racing is to go for victory in the heats. The winner of every heat always ends up with a better qualifying time than all the racers who finished behind him.

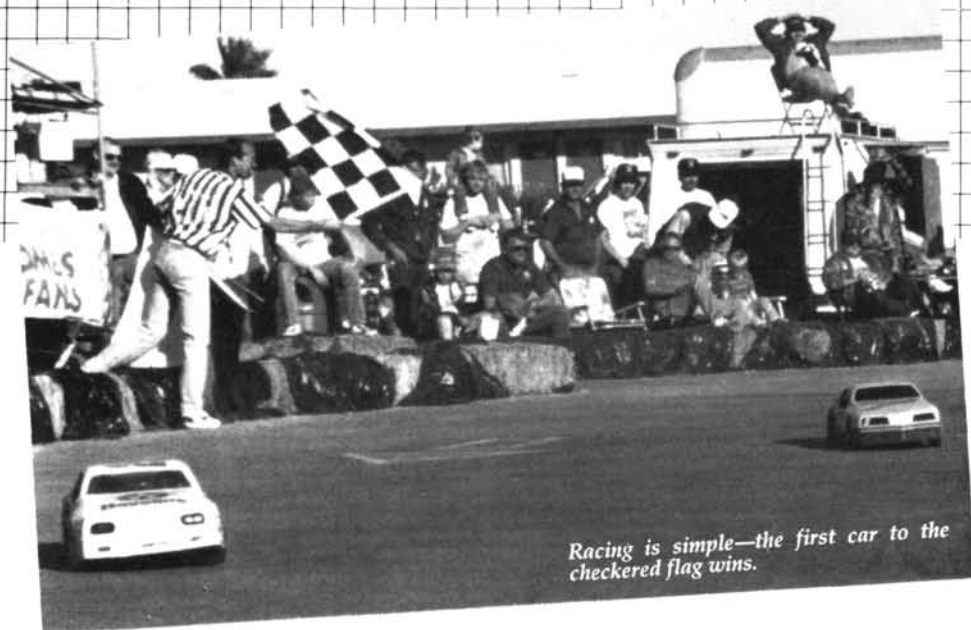
The second piece of bad advice is that you should move over and let the leader go by when he's ready to put you a lap down. You can't usually win if you're a



If you're going to get hammered, you're better off pulling over.

lap or more behind the leader. Make sure everybody who passes you earns it. Take the best line through the turns, going as fast as you can. If someone can still pass you, he deserves to win!

There are only two situations when you should move over and let a car



cars he passes. Most hammers' cars are blazing fast on the straights where they do the most damage to whomever they hit. While R/C cars will take a lot of abuse, there's no reason to subject your car to a hammer. Pull over and let him go by. Frequently, you'll be able to pass him when he runs over the car ahead of yours.

Don't be intimidated into moving off your line just because the race leader is knocking on your rear bumper. If he's good enough to win the race, then let him prove it by racing past you. If you can stay on the lead lap, you have that much better chance of winning. And winning is where it's at!

Next time I'll discuss some specific driving styles. ■

behind you go past. The first arises when you're unable to make your car hold a line through the turns. If your car is all over the track, don't ruin someone else's chance of winning. Either bring your car

into the pits to correct the handling problem, or get off the throttle and pull over as others go by. The only other time to pull over is when the driver behind you is a "hammer." A hammer is one who drives through, rather than around, the

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- Lexan Sprint Car Body & Wing
- Fiberglass Chassis & Shock Mounts
- Aluminum Roll Cage, Nerf Bars, Push Bar & Headers

Kit w/Alum Wheels 249.95

Kit w/Nylon Wheels 189.95

Does not include
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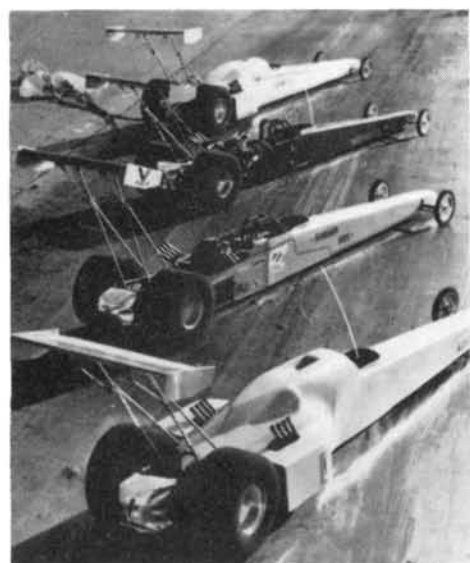
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DRAG CAR MANIA



A group of 1/4-scale Top Fuel "Rails" wait patiently in the "burnout" area for their turn to burn 'em up!

by STEVE POND

Fred Faber of New York makes some last-minute adjustments before his assault on the 1/4-mile.



R A D I O D R A G THE THRILL OF 1/4

ANYONE WHO'S had his eyes open to the burgeoning R/C hobby will acknowledge the tremendous diversity in R/C cars which has developed. An R/C car can be very well adapted to virtually every application that its full-scale

counterpart has ventured into and this includes drag racing.

The sport of drag racing dates back to the very first automobiles where a contest of raw horsepower would determine who would make it to the end of the 1/4-mile in first place.

Today, the top fuel and funny car nitro-burning dragsters can generate more than 3,000hp and cover the 1,320 foot stretch in just over five seconds.

As with most other forms of motorsports, drag racing has spilled over into R/C car racing. This is evidenced by the birth of high-tech R/C dragsters ranging from 1/12- to 1/4-scale. Another indication of R/C drag racing growth is the high-tech R/C dragstrip at Universal Hobby and Supply*. This 1/10 scale dragstrip is 132 feet long, and sits alongside the off-road track that was the site of the 1986 Winternationals. It



Fred Hutchers, better known as "Panama Fred," takes some time between heats to check out the latest issue of Radio Control Car Action.



This 1/12-scale Firefox Conversion was running in the low 2-second range at over 50 miles an hour!



A line-up of some of the field with the lion's share of the 1/4-mile in the background at Atco Raceway in New Jersey.

CONTROL RACING

1/10-SCALE RACING MADE MORE ACCESSIBLE THAN EVER!

features two side-by-side paved lanes that are used for the most part by 1/10- and 1/12-scale electric dragsters. There's also a hobby shop carrying a wide variety of parts for most of the popular cars in case you need to do some last-minute repairs.

During my visit to Florida to cover the Car Action Weekend at Lake Whippoorwill International Speedway, I was invited to the Universal Dragstrip to see some of the drag racing that goes on there every weekend.

The two lanes are 132 feet long with an equally long shut-down area. Each lane is controlled by a custom-built timing system which is identical in

function to the systems used in full-scale drag racing. The "Christmas tree" is also identical to the full-scale tree that indicates pre-stage and stage, and has four yellow lights, a green, and a red.

I'll give you an idea of how this works. The timing system is controlled by lights and photo cells, and when you roll up to the line and cross the first light beam the pre-stage light goes on. As you roll further forward, the tires interrupt another beam which triggers the stage light. When both the pre-stage and stage lights are lit up, you're ready to race. A timer is then started and this turns on the yellow lights in sequence at one-second intervals followed by the green. As the car leaves the line the timer starts. If you leave the line before

the green, the red light comes on indicating a false start that disqualifies you for that race.

When the car gets to the other end, it goes through one set of lights that start a second timer, and the last lights that stop both the first and second timer. The first timer reads the elapsed time taken to cover the entire length of the strip, and the second timer calculates the top speed of the car at the end of the race.

The beauty of this system is that it allows the participants to run eliminator-type racing. By using a handicapping light, eliminator racing allows a match-up between a 2.5-second superfast car, and a 10-second car. Let me explain. When you run

(Continued on page 106)



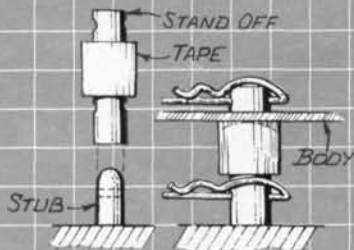
Left: The Q50-powered Pacesetter Rail owned by Bob Vansciver, owner of the Atco Raceway in New Jersey. Below: Weight plays a big role in electric drag racing as evidenced by this hole-ridden RC 10 dragster.



A 1/10-scale drag racing enthusiast staging his car for the showdown.

Pit Tips

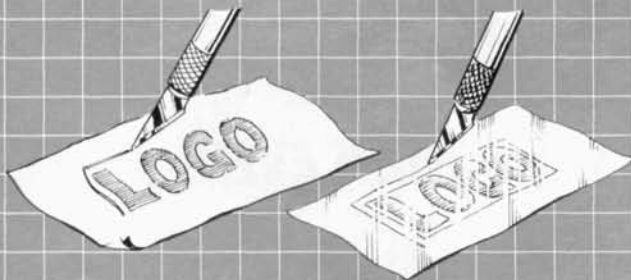
by JIM NEWMAN



BODY LIFT FOR CLEARANCE

After putting a different body on his chassis this owner found that wheel clearance was insufficient. Using short pieces of aluminum tube cross-drilled for body clips, he fitted these stand-offs over the existing body-mounting stubs. A thick wrapping of adhesive tape created ledges on which the body rested, held by a second set of clips.

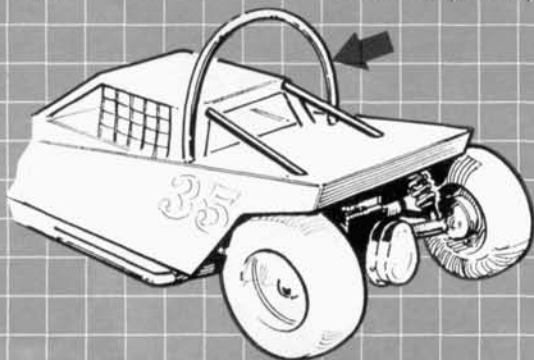
John Hollis, Morrisville, NC.



HOME-MADE STICKERS

This racer decided to make sponsor's decals for his car. Taking suitable labels and wrappers, he carefully cut closely around the logos. He then took clear adhesive plastic, laid an oversize piece over each logo and trimmed around them, leaving a 1/4-inch margin. Each film-covered logo was then applied to the bodywork and carefully smoothed to eliminate air bubbles. Laminating plastic is as close as your office supply store, and one brand name is C-Line Products.

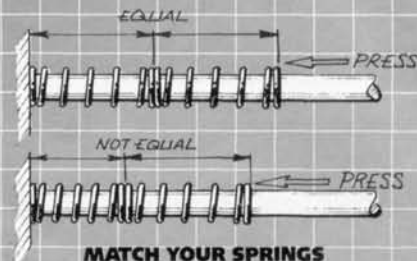
Colin Bates, Duluth, MN.



LOW-COST ROLL BAR

A suitable roll bar will frequently set your car upright automatically after a roll-over. This one was made from a few cents' worth of plastic-covered, heavy-duty copper wire from the hardware store. Winding tape on each end made it fit firmly into existing holes for body screws. This one went on a Grasshopper and will also fit a Hornet after slight body modification.

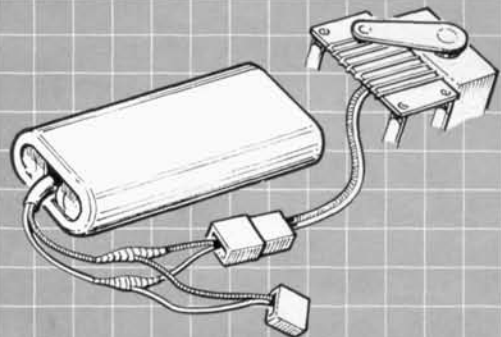
Tom Boes, Aurora, IL.



MATCH YOUR SPRINGS

If you have an assortment of spare springs of different rates, here's how to match them in pairs. Slip springs two at a time over a rod or pencil, etc. Apply pressure to the end as shown, with the opposite end against a wall or bench, measuring the spring lengths as you do so. Matching springs will be of equal length while unmatched springs will be of different lengths. As you match each pair color code them with dabs of paint just as is done with full-size race cars.

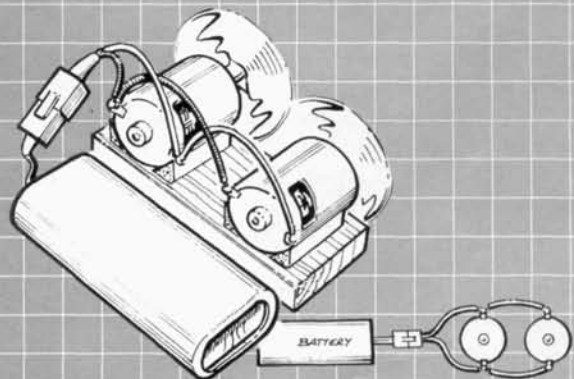
Chris Sager, Maryborough, Victoria, Australia.



SAVE BATTERY PLUG WEAR

Continually plugging and unplugging the battery for charging was bound to lead eventually to unnecessary connector wear, or so our contributor thinks. To minimize this possibility he cut his battery leads and wired in a parallel charging plug so that he no longer has to disconnect the pack. I suggest that you look back at an earlier column to see how Harvey Gleason brought his plug out of the back of the car for easy access. You could do likewise.

Mathew F. Palo, Escanaba, MI.



BATTERY DISCHARGER

Having a couple of old motors lying around, our inventive car owner wired them in parallel, lashed them together and attached a suitable plug. He plugs in his Ni-Cd pack to run it down for proper recharging. It's a shame that the motors didn't use that energy to do something useful and I suggest mounting a couple of small fans on the shafts and using the breeze to cool the battery while discharging.

Troy Turbeck, Assumption, IL.

I frequently use the term "spring rate" in my column and many car owners, especially the younger ones, may not know what this is. All springs have an identifying rate: it takes a certain number of ounces or pounds to compress a spring a distance of 1 inch. For example, if it takes 2 pounds to compress a spring 1 inch then that spring has a rate of 2 inch/pounds. A second example: if it takes 5 ounces to compress a spring 1 inch, then it has a rate of 5 inch/ounces. The higher the number of inch/ounces or inch/pounds then the greater will be the stiffness of the spring.

DRAG CAR MANIA

Home-Grown Project



1/10 SCALE PRO STOCK

Grumpy's Toy VI

by ERIC GOLDSCHRAFE

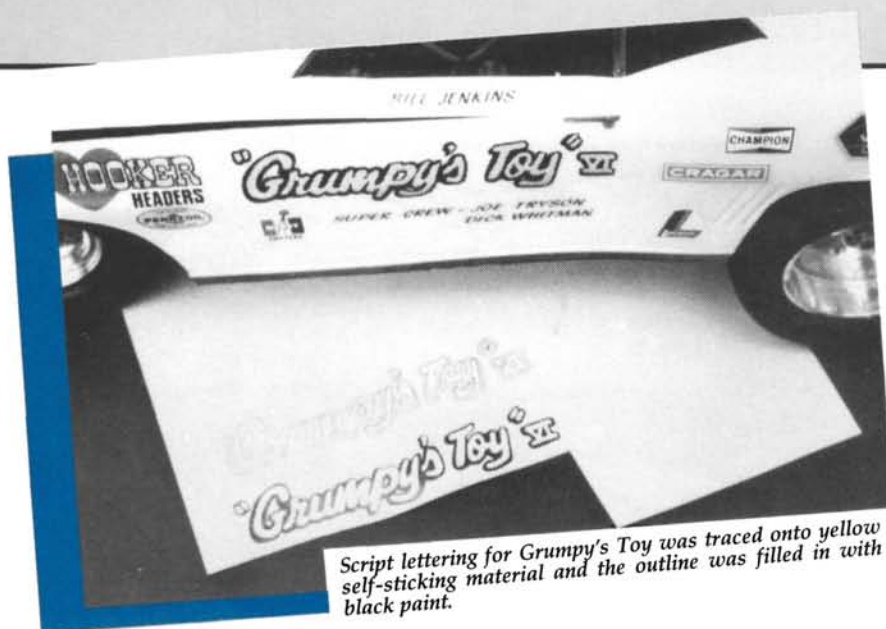
JUST AS RICHARD PETTY is a legend in stock car racing, and Mario Andretti one of the all-time greats in Indy cars, Bill "Grumpy" Jenkins is one of the premier members of drag racing's Pro Stock class. One of the "founding fathers" of this class back in the late 1960s,

A NEAT RENDITION OF BILL "GRUMPY" JENKINS' FAMOUS CAMARO.

Jenkins continues to apply his talents to some of the quickest and fastest "doorslammer" drag cars in the sport. Having worked his way up the Super Stock ranks in the second half of the '60s against some stiff competition from the factory-backed Ford and Chrysler cars, his well-known Chevrolets were immensely popular with the fans. As the obvious underdog, Jenkins and his "Grumpy's Toy" Camaro won many eliminator

rounds and match races against some pretty heavy favorites, including Ronnie "Mr. Four-Speed" Sox, "Dandy" Dick Landy, "Dyno" Don Nicholson, and "Fast Eddie" Schartmann. Bill Jenkins is currently one of the most respected "wrenches" at the strip.

The car featured in this project is not one of the tube-framed, tubbed-out, 7-second elapsed time ground-pounders seen at current drag meets, but one of the classic early examples of a Pro Stocker (PS). The real car had a stock body and chassis, relatively original passenger car suspension, and stock-block engines. These cars looked a lot like the cars found at the local dealership, rather than like the stock cars used at today's



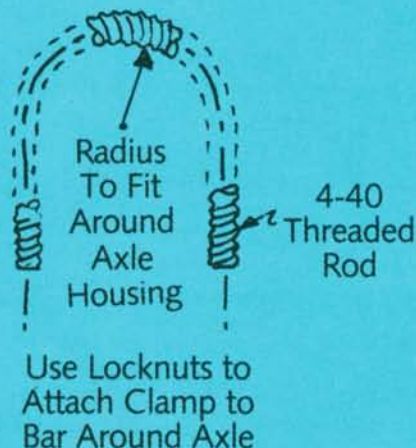
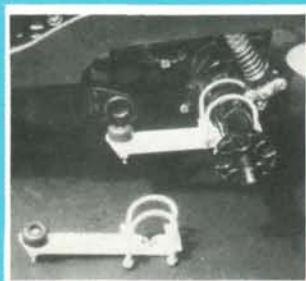
events. Current PS machines have modified body panels that may be removed from exotic, custom-made frames in seconds to reveal very expensive, alloy-block engines, 5-speed transmissions with separate levers for each gear, and multi-link rear suspensions that only just fit between monstrously wide drag slicks.

of cars using the same format, this article provides the basic information to construct any of the original Pro Stockers. The best sources for research are back issues of hot-rodding magazines of 1967-1972. While these might not be available from the publisher, you may find some at a flea market or an auto swap meet. Another,

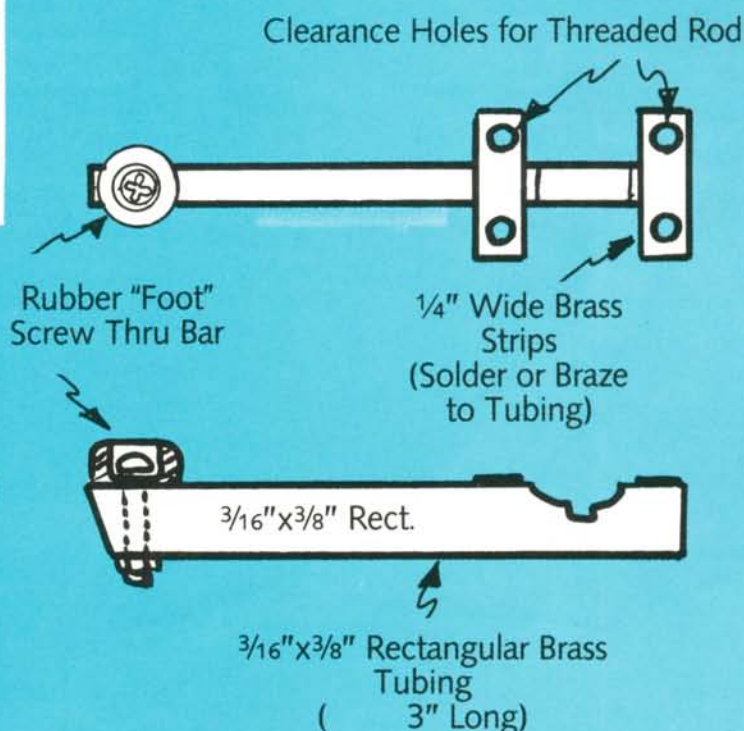
Using a Parma* '69 Camaro body and a Grasshopper or Hornet kit by Tamiya*, this project allows an easily recognized car to be built on a common, easily modified chassis. None of the modifications are permanent, allowing transformation back to the original off-road configuration in minutes. Several of the changes and modifications are not necessary, but were made in the interest of better straight-line performance.

As there were several well-known Camaros similar to "Grumpy's Toy," and other makes

Build Your Own Traction Bars



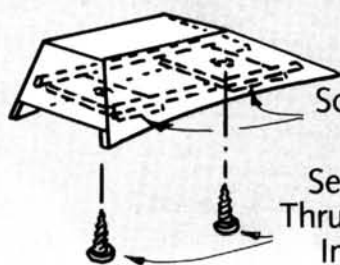
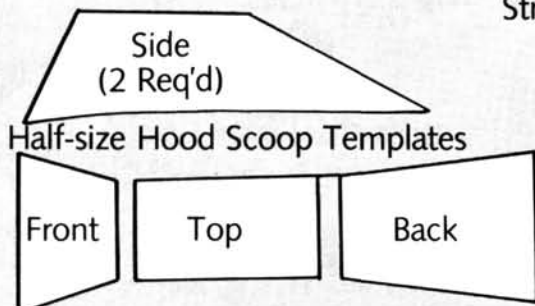
Full-size Pattern for Grasshopper/Hornet



Grumpy's Toy

Half-Size Template For Doors

Half-size
Template
For Fender
Stripe



Scrap Plastic Bracing
On Inside
Self-tapping Screws
Thru Hood From Below
Into Scoop Braces

more graphic presentation is the home video "Hot Rods from Detroit" available from Diamond P Video*. This film is loaded with action and colorfully traces the history of these cars from the '60s right up to early 1987.

Before you trim out the body, check its fit on the chassis with respect to the wheelbase. Most stocker bodies are about a 1/2 inch too long here, but they don't look right if you shorten the fender cut-outs. With the Grasshopper-type cars, you can remove the side nerf bars (they won't be needed under the body) and take out the four screws holding the rear-axle-assembly pivot blocks. By sliding them out until the forward hole of each block lines up with the rear holes in the chassis tub, and putting one screw back in each side, the pivot blocks relocate the rear end about 1/2 inch further back.

The clear body may now be set down over the chassis, and the fender cut-out locations drawn in place with a china marker or crayon which may be easily erased later. Note that the cut-outs aren't round, but somewhat squared-off on top. Since this detail isn't molded into many bodies, consult some reference material if you want to keep a "stock" appearance.

First, trim off the excess Lexan from the bottom of the body, using a steel ruler as a guide along straight sections. You don't have to cut all the way through, as flexing the plastic along the partially cut-through line will make the excess material snap cleanly away. By carefully repeating this process on the fender cut-outs, a clean neat job will result and, if you save the scrap piece from one side, you can use it as a template to make the opposite side identical. The only body modification is the fabrication of a plastic "Grumpy Lump" hood scoop, and this is screwed on from underneath the hood. Jenkins' cars were all mostly white, and the Camaro was painted with Pactra* Sprint White paint after the grille was blacked out.

Automotive self-stick metal foil was used for all the chrome, and black Top Flite* MonoKote trim was applied to the rocker panels. A template for the front fender trim stripe was drawn on

drafting vellum, and transferred via carbon paper to the backing sheet of the black MonoKote. This made one directly traced, and one a mirror image, for the left and right sides. These were cut out with a sharp pair of scissors and carefully applied to the body.

The "Grumpy's Toy" lettering was traced onto a piece of yellow self-stick decal sheet, and the black outline hand-painted with a No. 00 artist's brush. These were cut out with a scissors and a hobby knife, and carefully applied to the doors.

The rest of the lettering was created with Autographics* lettering sheets, and the speed decals are from Parma's colorful new decal sheets (No. 10606 and No. 10607). By the way, thanks, Parma! You've filled a big gap for the hot rodders out there.

Mounting brackets were made from 1/8-inch thick aircraft plywood, with some spruce reinforcing strips for rigidity. Tamiya screw-in metal posts (from the Frog or Fox parts bags) allow standard spring clips to hold the body in place. You'll notice that the front shock piston rods will hit the bottom of the hood if you meet a bump,

(Continued on page 124)

**Grumpy
Jenkins...
a drag
racing
legend.**

PERFORMANCE DRAG PRODUCTS

COBRA

A NITROUS-OXIDE SYSTEM
PUSHED THIS
1/4-SCALE MISSILE PAST
THE 20MPH MARK!

D R A G S T E R

by JOSEPH BRUNI

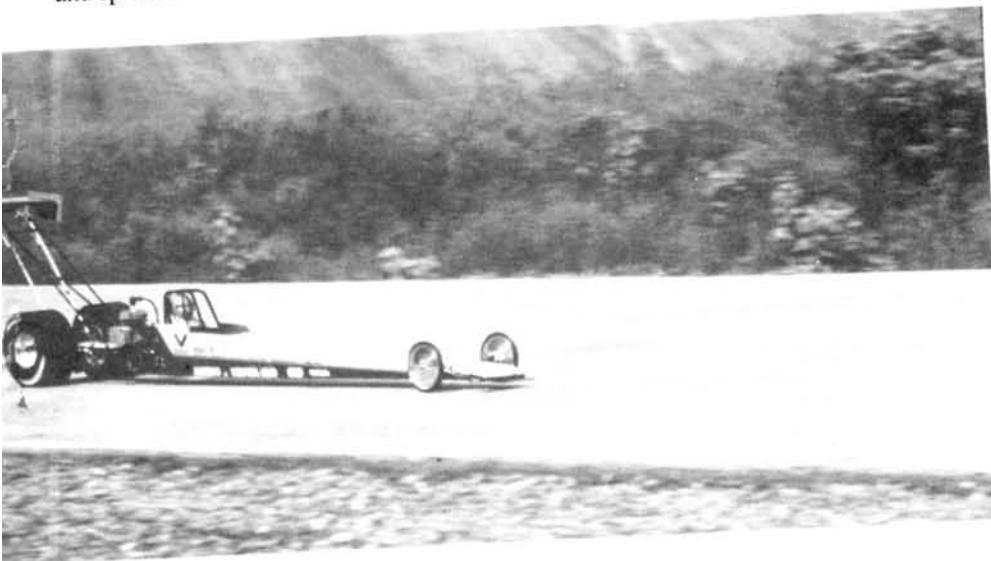
AS A TEENAGER in the late '60s and early '70s I was fortunate to experience the peak of the Muscle Car era. I recall looking forward to that Saturday excursion to New York National Dragway to watch the most exciting drag racing competition imaginable. The power, thunder, speeds and spectacle were overwhelming for any true-blooded

race fan. I knew I was hooked forever when the king of the top fuel dragster class, Big Daddy Don Garlits, roared down the quarter-mile strip at over 200mph. But, unfortunately, just as I came of legal driving age, there was the inevitable rise in gas prices and the muscle car craze seemed to plummet to an all-time low, thus eliminating my chance to power shift my way down the 1/4-mile strip.

Well, the people at Performance Drag Products* (PDP) have sensed the recent resurgence of drag racing popularity

and now provide an opportunity for any enduring, hardcore race aficionado, like myself, to fulfill the dream of a lifetime—to drive your very own top-fuel dragster. After two years of intense prototype research and development, Jimmy Parker, founder and technical expert at PDP, has finally made available one of the fastest and most detailed 1/4-scale top fuel dragster kits, the Cobra.

The car's vital statistics are impressive: 92 inches long, 22 inches high with a 68-inch wheel base. With 9-inch diameter by 4-inch-wide monster slicks on the rear and



COBRA



Locking the brakes at the starting line allows the driver to rev the motor to about 5500rpm.

1/2-inch-wide rubber treads in front, all mounted on spun-aluminum split rims, you have one lean drag machine. The cage-type tubular frame is made of an extremely strong, flexible 4130 chrome moly, the same stuff the big boys use, that is meticulously welded. Now add the 2.3-cubic-inch 3hp (@ 8,500rpm) Zenoah motor integrated via a centrifugal clutch and straight drive shaft to a quick-change (Ratio choice of 1:1 through 7:1) rear end gear assembly, and you're ready to unleash this 25lb serpent against any contender.

The kit requires approximately 20 hours assembly time to be completed. Aside from requiring the use of any 3-channel car radio system, every nut and bolt is included. The car is a complete out-of-the-box stock version (aside from the optional scale driver), utilizing a 3-channel Futaba* Magnum radio system. We topped off the tank with



a 64:1 gas-oil mixture through the convenient quick-fill device that is included in the kit. Two quick, easy pulls on the Zenoah rope starter and the engine ignited, with an incredible roaring sound. As the car warmed up I went through a final systems check: steering, throttle and brakes. The braking system is an advanced dual-disc system. There are two round disc brake pads on each side of the rear gear box. Taking advantage of the third channel on the Futaba, I was able to lock the brakes at both the start and finish line. Locking the brakes at the starting line allows the driver to rev the motor to about 5,500rpm (stall speed for centrifugal clutch engagement), and allows a spontaneous release of the brakes, producing incredible torque and awesome rear tire burnouts off the

(Continued on page 38)





1/6 Scale

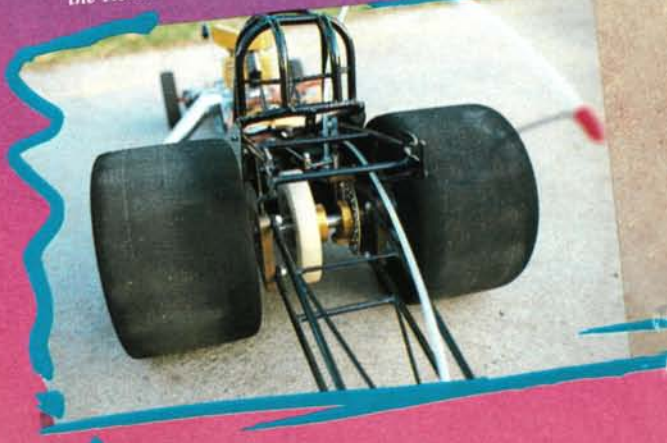
FUNNY CAR

by SHARYN McCUMISH

ANYONE WHO'S INTERESTED in racing—drag racing in particular—dreams of owning a top fuel dragster or funny car. With the extremely high cost of racing on a competitive level, this remains only a dream for most folks. But the excitement of real racing can be achieved with 1/6-scale radio-control cars by MK Engineering*. These detailed, life-like cars accelerate from 0 to 100mph in under 4 seconds and run on 60 per cent nitromethane.

With full-scale drag racing becoming so costly, Mike Kopchick saw a greatly increased interest in radio-control drag racing and developed MK Engineering. Mike Kopchick worked in the field of racing for many years, working for such people as Ed Pink, Keith Black, Henry Velasco and Donovan Engineering. He has also raced 1/8-scale drag cars for several years, and has established a shop on the east coast in conjunction with Aeromarine Laminates*. Edward Mandeville assists with the intricate

Wheelie bars and drilled disc brakes keep the car on the track during the Rossi .60 handles the business end of things.



machining operations required to produce a 1/6-scale Funny Car kit.

"I've talked to a lot of people who are becoming bored with the 1/8-scale R/Cs," said Kopchick. "They've shown a desire for bigger cars and 1/4-scale is really catching on, but there are many people who still want a smaller, more convenient car."

Special care, over a year of development and several years racing experience have been utilized to deliver the finest R/C funny car kit on the market today. The MK Fuel Funny Car is modeled after a Ford Tempo funny car body. The basic kit includes: fiber glass body, disc brakes, precision bearings (used throughout) all aluminum construction, and a Rossi 60 engine, including centrifugal clutch, custom heat sink and exhaust pipe.

The billet aluminum wheels are highly detailed and come with screws that go into the tire to prevent slipping on acceleration. There is built-in chassis flexibility allowing

and shutdown while

This Rossi-powered projectile fueled on 60% nitro just might be the fastest R/C car in existence!



weight transfer for smooth acceleration and easier handling.

Another impressive feature is a dual-sided rear gear that can be turned around if stripped out during racing. This basic kit requires a 2-channel radio (not included) but a 3-channel radio is recommended if all options are required to function.

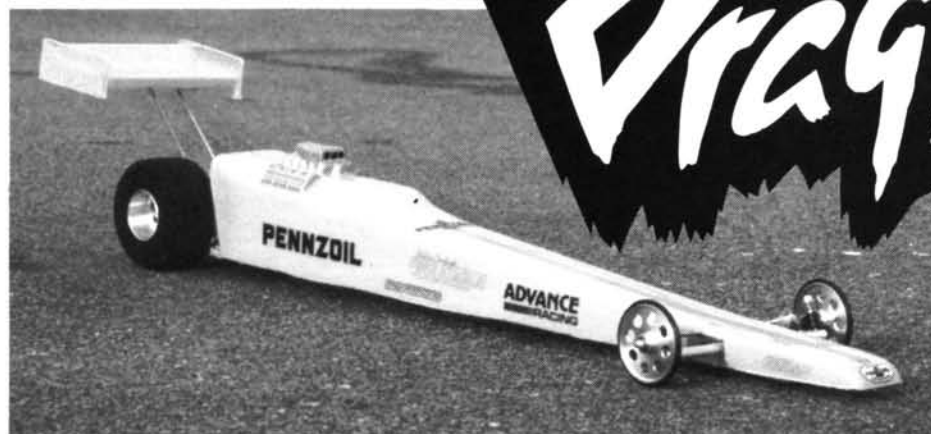
Some of the available options include wheelie bars, parachutes, working fuel injector and functional nitrous oxide system which allows a 125mph range (0-140 in 2.8 seconds is possible). The

(Continued on page 124)



**Left: Aluminum frame neatly surrounds radio system and drive gear.
Above: Beautiful injector scoop rams the air down the throat of the Rossi carb while foam-clad billet aluminum wheels put the power to the ground.**

Track Report



by RICH HEMSTREET

E L E C T R I C P R O J E C T I L E

AN ENTRY-LEVEL top fuel rail? With cubic dollars poured into cars that can reach almost 300mph in the quarter-mile, how can there be an entry level? Advance Engineering* has now added a 1/12-scale, AA Fuel Rail to their Dragin line.

THE KIT: The 1/12-scale rail is complete, except for electrics. Mini-Mag aluminum wheels are used front and rear, and realistic-looking 1/12-scale bicycle wheels and tires are used up front. Foam slicks are mounted on the rear.

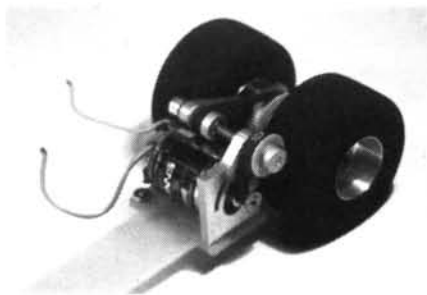
The Rail has a full set of ball bearings in each kit. As is usual with Advance products, the machining is excellent. The clear dragster body is quite plain, and that's the kit's only shortcoming.

To make the 1/12-scale Rail narrow enough in the rear, Advance had to use a dual belt drive with a jack-shaft. This locates the engine directly in front of the rear tires.

Advance uses a bell-crank on the steering setup, and this moves the servo to the rear. This enables them to use a body that doesn't require a hump up front for servo clearance.

CONSTRUCTION: While the belt

drive looks a little confusing, it does go together smoothly if you follow the instructions. Optional pulleys are available to provide a wider range of gear ratios. The rear axle position is adjustable with four set-screws, so you



The dual-belt-drive system is used to narrow the rear end.

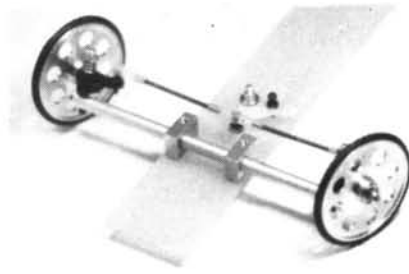
don't have to use different belts when changing pulleys.

Try to keep the weight to the rear of the chassis. Your batteries should be stacked, rather than lying flat. It doesn't hurt to have a dragster's weight up a little higher since you don't have to go around any corners.

An electronic speed control will fit into the Rail a lot better than a resistor will, and it will improve performance. Be sure to glue the front tire rings to the

wheels. Even though they appear to be a tight fit, they could fly off at high speeds.

PERFORMANCE: Advance now includes information about how to gear your dragster. When you change from a



A bellcrank is used on the steering assembly that allows the steering servo to be mounted as far back as possible.

6-cell battery pack to a 7-cell pack, you should also change your gearing to take advantage of the higher rpm. Follow the instructions when setting up the steering castor. Lay the king pins way back for stability at high speeds.

In an effort to reduce weight and increase power, many drag racers are trying other batteries. The standard sub-C Ni-Cds are too heavy, and 1/2 sub-C Ni-Cds are the most readily available

(Continued on page 38)

1/12 DRAGSTER

(Continued from page 35)

alternative. A new N-cell that's even smaller is also being tried. All of these cells provide the same voltage, but the smaller cells have fewer amp hours. With runs lasting only from two to four seconds, you don't need the 1200mAh of the sub-C cells.

When you add more cells don't blow up your speed controller. There are now speed controllers available that will handle 20 cells.

Electric drag racing is fun. You can experiment with motors, gearing and batteries and you'll know immediately if your tinkering helped or hurt your performance. The stopwatches don't lie. Advance Engineering's 1/12-scale Rail is a great way to get into this new aspect of the sport.

**The following is the address of the company mentioned in this article:*

Advance Engineering, 180 S. Hwy. 67, Unit G, Box 766, Woodland Park, CO 80866. ■

1/4-SCALE COBRA

(Continued from page 30)

line. (Move over Big Daddy.)

To assure our readers of accurate top speeds, we requested the presence of a Buffalo Texas Police Department radar unit, manned by officer Gery Broadhead to calculate all runs. We marked off the appropriate 330-foot scaled dragstrip and the PDP race team rolled out the *Radio Control Car Action* top fuel. I was ready for my first run. My adrenaline level shot up and I broke out in a cold sweat as I approached the starting line. I staged the car, waited for the "go" signal, depressed the throttle and released the brakes. The car burned off the line and screamed down the dragstrip. About midway down, I was starting to veer too much to the right so I shut down all systems and coasted past the finish line with a radar calculation of 52.1mph. I knew then that we were going to encounter outrageous top speeds.

After a quick steering adjustment I reapproached the line. Once again I was as excited as if I were inside the actual cockpit as I went through all the necessary checks. I buried the throttle, popped the brakes and the car flew down the track as straight as an arrow, with a perfect run at 65.2mph. (Stock?) I enjoyed run after run but felt the need for some competition. Jimmy Parker and the PDP race team rolled out their awesome, blue and chrome nitro-burning (NOS) monster fuel. This car had all the available options: headers, fully suited driver, nitrous oxide system and a scaled parachute. With a quick pull the car started up, and you could smell the nitromethane in the air as Jimmy staged the car for a solo test run. With a grin on his face, he revved it up, released the brakes and the car started burning rubber. As he kicked-in the NOS system, the car screamed louder and launched down the track. About three-quarters down the track a front tire flew off the rim. We anxiously waited for the radar calculation—an unbelievable 73.6mph. There's no telling what a perfect run would produce! With no luck in finding the runaway tire, and with the hot Texas sun setting on the horizon, we decided to postpone our race. So stay tuned for the future race results.

**The following are the addresses of the manufacturers mentioned in this article:*

Performance Drag Products, E. of I-45, Hwy 79, P.O. 537, Buffalo, TX 75831.

Futaba Corp. of America, 555 W. Victoria St., Compton, CA 90220. ■



Max Industries

Max Industries lets you take it to the MAX!
Get the MAX from your packs...

with our AC/DC thermal peak charger...



Finally - a safe and effective AC/DC peak charger.
No timer - just plug in!
Charges either 7.2v or 8.4v packs to full thermal peak, then automatically switches to trickle.
AC/DC list only \$49.95
DC only - list \$29.95

OR use a Thermax® peak protector with the charger you already own



Works with any charger!
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Troubleshooting

by FRED MURPHY

BECs and Eliminating "The Point Of No Return"

THE DEEP, DARK SECRET of battery eliminator circuits (BEC) is not as terrifying as you may think. BEC refers to what its name implies—the elimination of batteries; i.e., the batteries that power your car's receiver. Let me give you a little background information before we see what makes them work.

The industry standard for powering a radio system is 4.8V to a maximum of 6V. This is a fixed voltage at which the receiver will work most effectively, and keep in mind that the receiver works off a *fixed* voltage. On the other hand, the servos that are powered through the receiver cannot work effectively off a fixed voltage. They have their own motor drive and draw power when they need it, so the servo's voltage requirements may not be the same as the receiver's at all times.

When the servo motor is working it's drawing much more voltage than when it's idle; this particularly applies to the steering servo. This aspect was the most challenging in designing BEC systems for R/C cars. How can you properly regulate or control voltage that has to be on demand at all times, but also maintain the correct amount of fixed current to power your car's receiver?

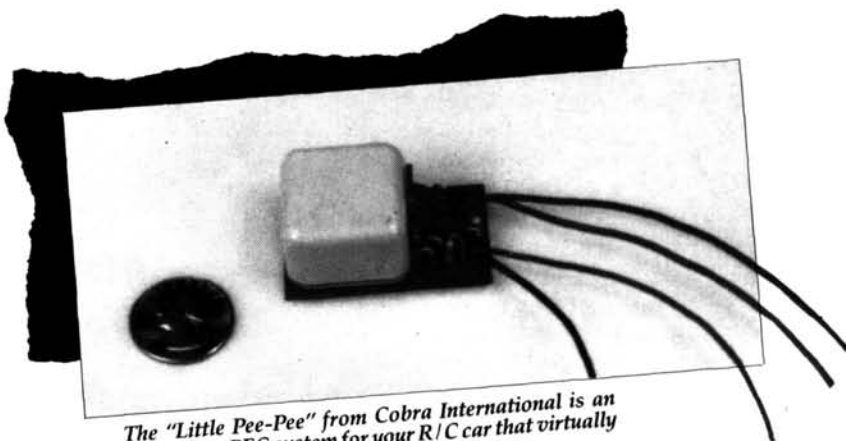
If the standard batteries used in a car were 4, sub-C cells the solution would be easy—just run your radio system directly off the main battery source giving 4.8V of power, and the servos could draw the power they need *when* they need it. You could even get away with this arrangement if your main power source was 5, sub-C cells delivering 6V, but a problem arises when the standard power source

becomes 7.2V or 8.4V. This is just too much voltage for the radio system to handle safely.

How do we get the voltage from 7.2V or 8.4V to the 4.8V to 6V that our radios can use? Those of you who know something about electrical systems in passenger cars might say: "That's easy. Use a voltage regulator. That's what my car uses to allow the interior lights and the other low-voltage lights to operate off the car's 12V battery system." That's exactly right; but did you ever notice the size and weight of an automobile's voltage regulator? You'd be better off using the receiver's battery pack. But, thanks to modern technology, the principle of the voltage regulator can be applied and used in today's R/C cars through a small component called a "diode."

A diode is a one-way voltage device that also doubles as a voltage-dropping unit. Another great feature of the diode is that it's not affected by current load which may be changed in an instant by the radio's servos.

This is the feature that made BECs possible. We can now eliminate the added weight of a radio system's independent power source and run off the main battery source.



The "Little Pee-Pee" from Cobra International is an innovative BEC system for your R/C car that virtually eliminates the possibility of a runaway car.

I must caution you that the only drawback to a BEC system is that at some point the main battery source will die, the available voltage from it will drop dramatically and the usable power for the car's radio system will be exhausted.

At that point you'll no longer have enough power to run the car or the radio system. When there's no more power to run the radio system, you might have a runaway car. On the other hand, the majority of races are only 4 minutes long so it may not be of great concern to you. My warning is directed at the pleasure R/Cer not the racer but, as I will discuss shortly, it may soon no longer be a concern for anyone.

Battery eliminator circuits are available in a number of forms. Many manufacturers e.g., MRC/Tamiya*, have an aftermarket BEC to fit just about any radio system. They've designed it as part of the receiver's on/off switch, and it can be easily placed in a car between the main power source and the radio's receiver using the BEC plug that's now a standard feature of the majority of Tamiya's mechanical speed controls. Using this type of plug is probably the easiest and most economical way to acquire a battery eliminator circuit, but many of the radio

manufacturers are now making the BEC an integral part of the radio system and so your problem is solved.

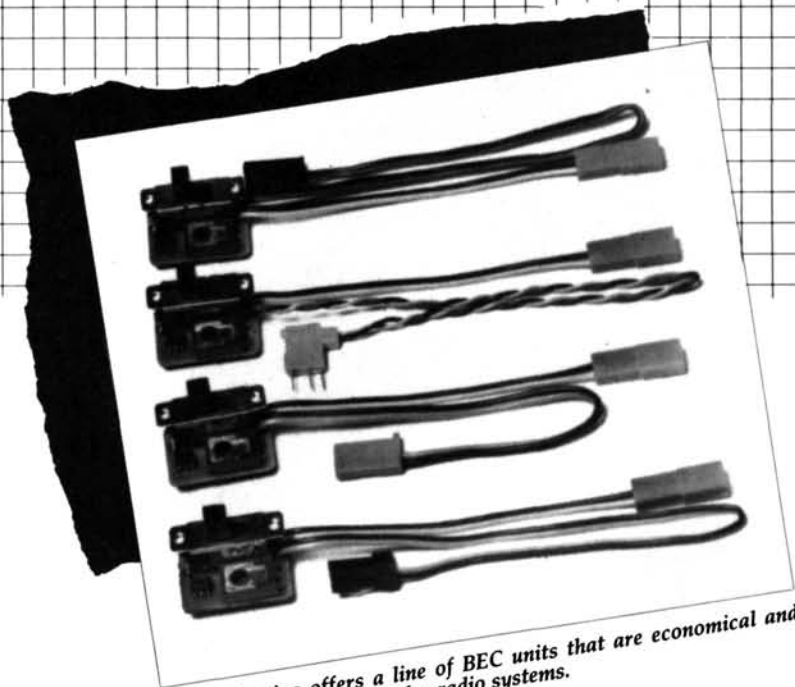
The other way to acquire BEC capabilities is through the use of an electronic speed control device which, once again, has the BEC built in.

All of the aforementioned ways of attacking the BEC will do the trick, but the problem still exists for the person who wants to get every last minute of running time from his battery. How does he know when the battery's voltage level is going to get too low to run the radio system? The runaway car syndrome! Hitting the curb at full throttle or losing your hard-earned dollars as your car disappears into a storm drain because you had no radio control. Well, listen up! Recently, a very interesting alternative to the BEC was brought to my attention: a unique component dubbed the "Little Pee-Pee."

The Little Pee-Pee is manufactured by Cobra International*, and literally has a mind of its own. This component goes in place of the conventional BEC, and its function is that of the BEC with one major addition—voltage memory. The Little Pee-Pee has an advanced power memory device that will allow the main power source to drop below usable voltage levels but still give you the ability to maintain radio control of your car.

In a test performed on my own Hornet with a fully charged 7-cell battery, I was able to run the car for approximately 9 minutes before the battery began to die, but never once lost steering or the ability to operate the speed control using the Little Pee-Pee.

When the car could no longer move under its own power, I put it on a car stand and continued to operate the radio system for another 30 seconds. There was no hesitation and no apparent glitches. At last, no more runaways!



MRC/Tamiya offers a line of BEC units that are economical and designed to fit most popular radio systems.

So, as you can see, no more mystery or fear. The BEC benefits many areas of the R/C industry, and some companies have even taken the BEC one step further—they have eliminated the receiver's independent power source and the point of no return. Good luck and happy motoring!

**The following are the addresses of the manufacturers mentioned in this article:*

MRC/Tamiya, 2500 Woodbridge Avenue, Edison, NJ 08817.

Cobra International, 1235 Lowery Rd., Norfolk, VA 23502. ■



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Premier Designs
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1/4-SCALE

by JOHN LAWLOR

FUNNY CAR

FROM PACESETTER



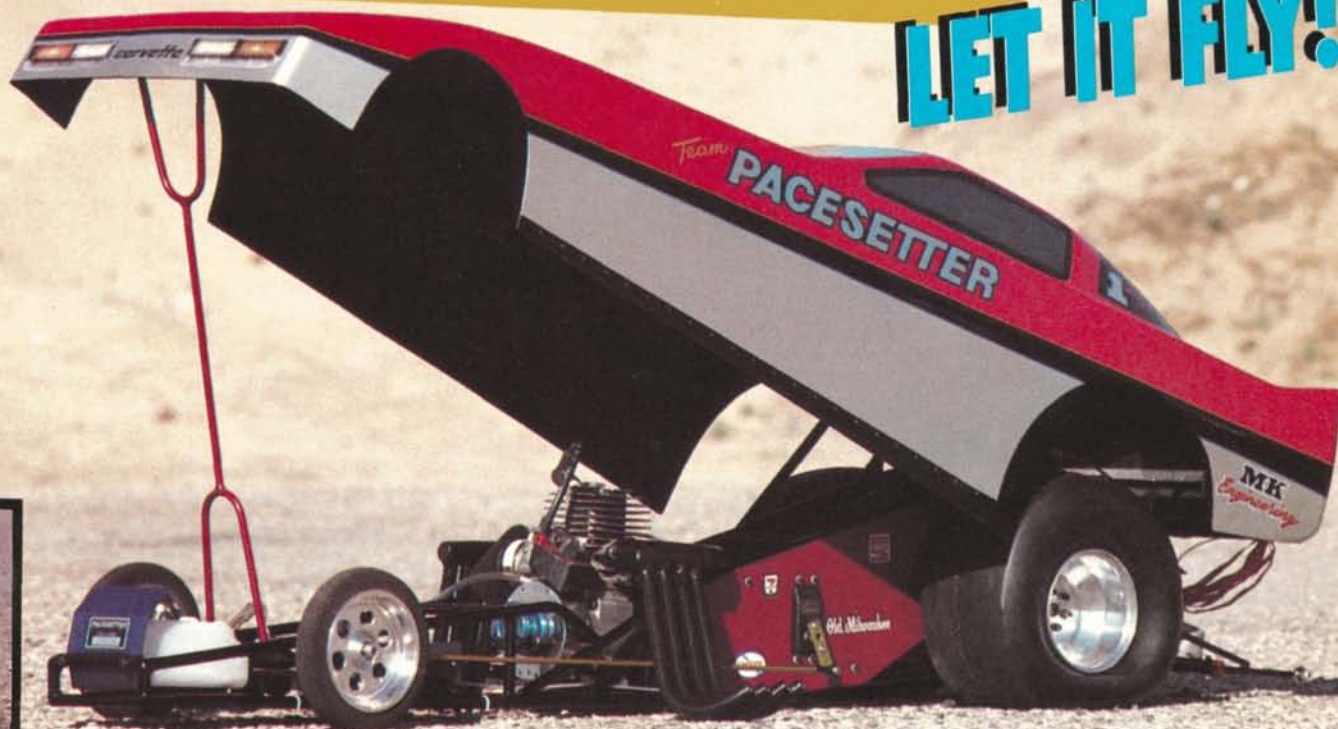
The gear differential is surrounded by the massive new Mickey Thompson drag slicks.

AMONG THE STRONGEST attractions in 1/4-scale racing is the 1/4-scale car's scale-like appearance. The larger a model car is, the more closely it can resemble its full-size counterpart, in detailing as well as in overall appearance. In 1/4-scale, it's possible to take dramatic advantage of that.

Pacesetter Products* 1/4-scale Eliminator drag-racing funny car is a fine example of scale likeness. Many of its components are



LET IT FLY!



The Quadra Q50 powerplant is piped with the optional header from Hedman Manufacturing.

authentic not only in appearance but in origin as well; they're made by the same people who build similar parts for full-scale race cars. In the words of Pacesetter's Mike White, "We've got the real people workin' on 'em!"

The Eliminator's drive train, including the rear end, is built by Mike Kopchick. He was head machinist at Donovan Engineering, a renowned racing engine builder, until he left recently to form his own company, MK Engineering, to build 1/4-scale racing parts.

The 50-inch-long funny car body is patterned after a current-model Corvette and is formed of hand-laid fiberglass by Elmer Pecka, a former principal in JE Fiberglass, which, in its heyday, dominated the real funny car body business.

Optional headers are produced by Jose Villaseñor of



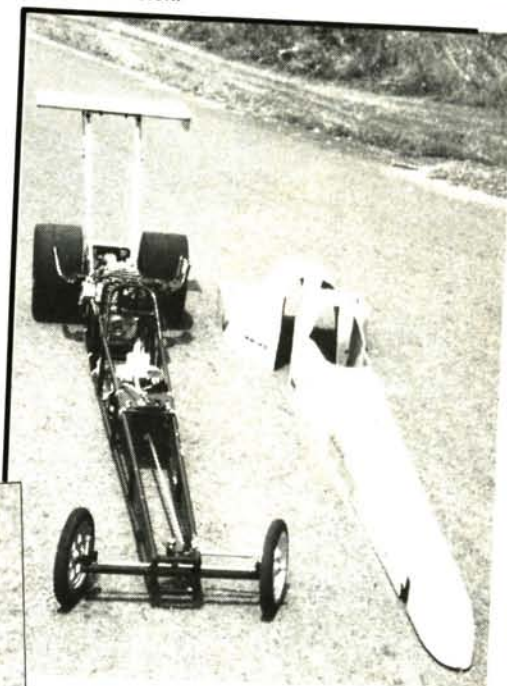
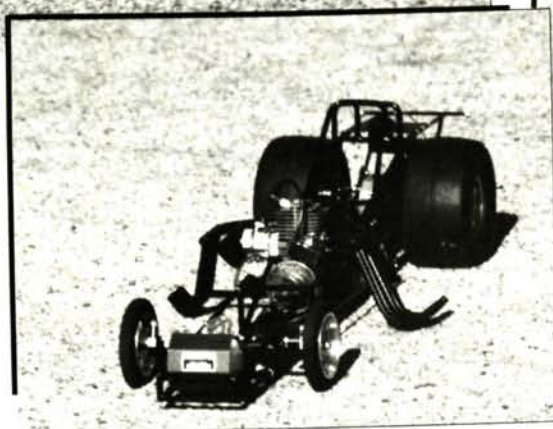
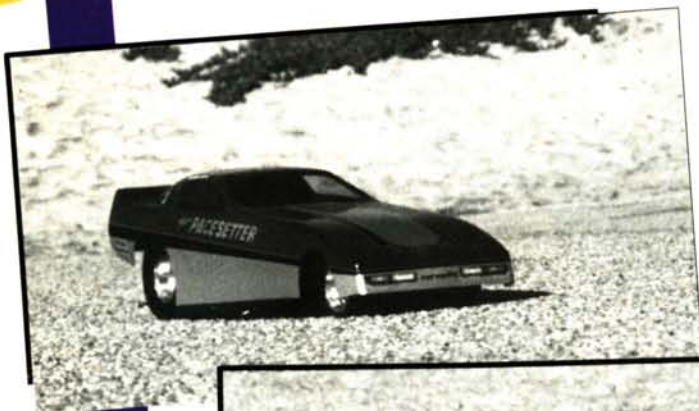
Hedman Manufacturing, one of the best-known header firms. "He comes over after workin' on Garlit's car," White says, "and makes headers for us!"

An optional drag chute for the Eliminator was developed by Filler Products, a safety equipment manufacturer approved by the National Hot Rod Association.

Pacesetter has just completed arrangements to get scaled-down rubber from Eugene McMannis of Mickey Thompson Tires. They're 9x4 inches at the rear and 5x½ inches at the front.

The Eliminator's frame is heli-arc welded together from aircraft-quality

The Vaporizer Top Fueler is also available in a new updated version.



tubular steel. The chassis layout is similar to that of the Pacesetter Vaporizer dragster, described in last October's issue of *Radio Control Car Action*, with a four-link setup at the rear to keep the solid axle from twisting during acceleration or braking. The brakes are dual inboard discs at the rear.

In standard form, the funny car is powered by a 50cc Quadra engine which, according to White, develops 4½hp on a 20-to-1 mix of gasoline and oil. An optional version, modified to run on methanol and nitro instead of gas, produces an estimated 5½hp. In either form, the engine drives through a centrifugal clutch. (A 35cc, 2.3-horsepower Quadra, previously

standard for both the Eliminator and Vaporizer, is no longer offered in those two cars, though it's still used in Pacesetter off-road and sprint car models.)

Mike White says the 4½hp Eliminator will run the 330-foot, ¼-scale quarter mile in 5.3 seconds at 100mph, while the 5½hp will do it in 4.2 seconds at over 120mph.

Those figures may be exaggerated, as "factory" claims often are, in the world of real race cars as well as in the realm of R/C models. But there's no question that the Eliminator is a handsome and well-made car that adds an unusual and truly realistic touch to ¼-scale drag racing.

In a future issue we will be testing this funny car with a radar gun to ascertain the validity of the speeds claimed by the manufacturer.

LVD

*The following is the address of the manufacturer mentioned in this article:
Pacesetter Products, 930 W. Hyde Park Blvd., Inglewood, CA 90302.

M R C



This was typical of the bump-and-grind during the Monster Truck races at the MRC Race Day.



Without a doubt, the Monster Truck races took the honors for the most incredible crash and bash of the decade!



These competitors wait patiently atop the driver's stand for the start of their heat.

RACE DAY SERIES

by STEVE POND

NOT TOO LONG AGO, publisher Louis DeFrancesco and I were invited to the first ever MRC Race Day hosted by Jackson Hobby Shop of New Jersey. The purpose of the race was to introduce a new racing concept that would give the amateur driver the same chance to win as a seasoned veteran.

In the past, to win a race, or even to be competitive, you had to have a high-dollar racing machine costing a king's ransom. This discouraged those who weren't able to afford this type of equipment from racing because they were already at a disadvantage with their entry-level cars.

The rules of the new race state that you may only run an MRC car in stock configuration. This includes the use of the stock Mabuchi motor, resistor speed control,



This beautifully painted Boomerang was a cinch for first place in the Concours contest.





etc. The reasons for this are two-fold. First is the desire to keep everyone on the same level of competition. By running virtually identical cars, there is more of an emphasis on driving skills, and not on the equipment used. Second is simply the wish to keep the cost of racing to a minimum.

All too often, I've seen people spend over \$300 in one day just replacing parts in order to stay in the race. That's as much as the price of a whole car kit! By adopting these rules, the cost of racing will be much lower, and racing will be more attractive to those who are interested but don't want to spend a fortune. The only exceptions to the rules are options such as ball bearings, tires, and perhaps a higher grade resistor-type speed controller. Other than the aforementioned items, the car must be in stock form.

**An innovative concept
in racing
that challenges the
racer's skills
instead of their
wallets!**



All of the R/C cars came down with a sudden case of Crushaphobia and headed for the pits while Randy Hansen was strutting his stuff with the Clod Buster.

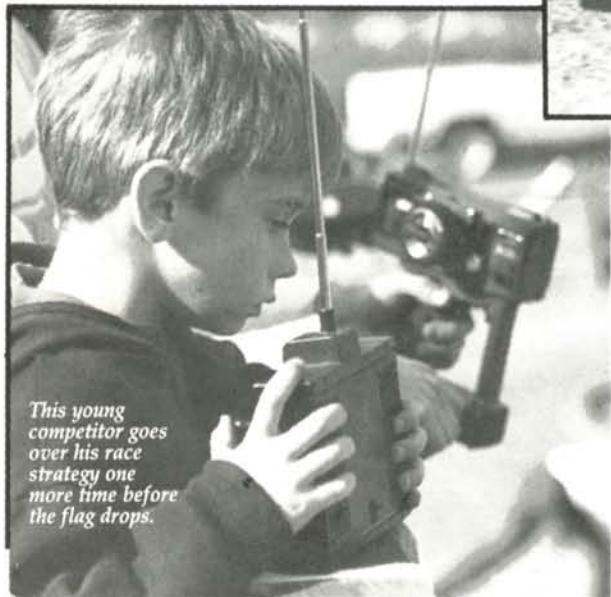
The day began with the judging of the concourse contest, which was won by a beautifully painted Boomerang four-wheel-drive. The cars were then divided for qualifying heats according to the type of motor and drivetrain they had.

The first heat was all

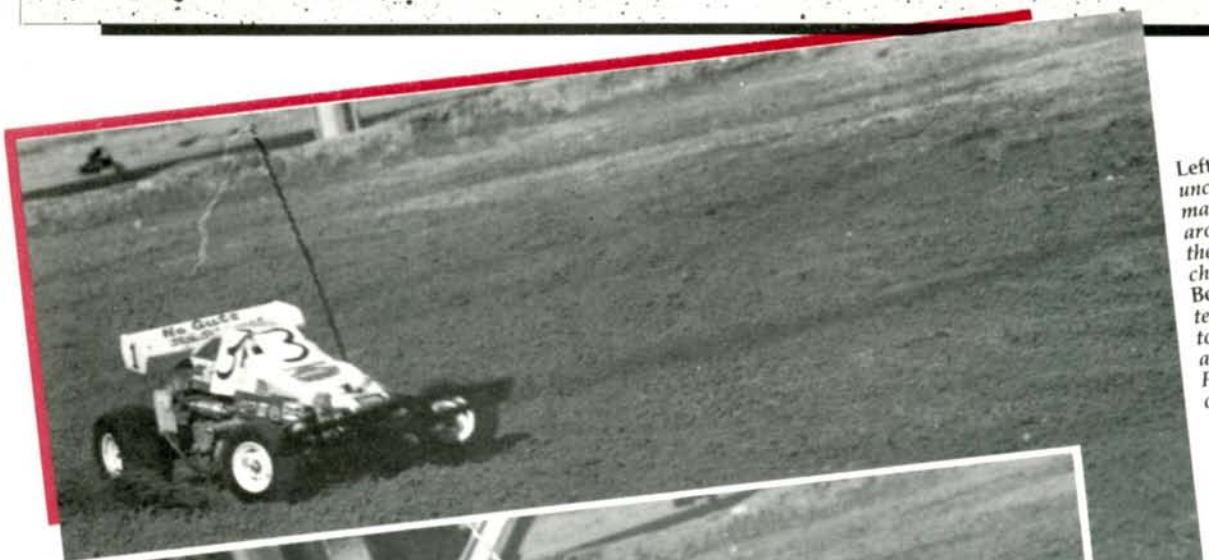
Grasshoppers with their stock Mabuchi 380 motors. Although the speeds were not blinding, the competition was fierce because all were running the same type of car!

The second round of qualifiers were 540-powered two-wheel-drive cars such as the Hornet, the Fox, Striker and the Falcon. These cars were running at faster speeds because of their larger motors, and this provided some thrills and spills.

Next up were the four-wheel-drive cars. This field included the Boomerang, Hot Shot, Hot Shot II, Big Wig, and the Super Shot. Those who were running the Big Wig and the Super Shot had to change to a stock Mabuchi 540 motor. The four-wheel-drive cars were turning some pretty impressive lap times because they were holding the track a little better than the two-wheelers were, and the action was breathtaking as the lead was



This young competitor goes over his race strategy one more time before the flag drops.



Left: An unchallenged Frog makes its way around turn #3 on the way to the checkered flag. Below Left: A testament to the tough competition are these two Falcons dueling it out for the lead!



The tough racing worked up some big appetites as you can see with this talented eater/racer.

juggled back and forth right up to the checkered flag. The last class in the field was the trucks, and these provided some of the best entertainment of the day. As the trucks went over the jumps, some landed on top of others and some overturned. Whichever way they made it around the track, it was a hell of a lot of fun.

When the dust had settled there were winners and there were losers, but all the participants went home with a smile on their faces and with a desire to come back again and give it another whirl.

That's what R/C car racing is all about. There will always be a place for the high-dollar competition, but the beginner is the one who supports the hobby and we at *Radio Control Car Action* applaud the efforts of MRC to make R/C car racing a sport where beginners and expert drivers compete on the same level with the same cars.

Although this racing format is still in its early stages and no solid rules have been laid out, it will obviously promote this great sport of ours and ensure its future growth. The staff at Car Action gives the MRC Races a big "thumbs up." Keep an eye out in future issues for an article by yours truly on "How to get the most from your stock car." This will give you a few ideas on how to get the most out of your cars without spending more than \$40.

RACE DAY SERIES



When the dust settled, these were the proud winners of the first race of the MRC Race Day Series.



Lou Routunda, Wayne Wood, and Mel Cotrell were judges for the Concours contest.



Randy Hansen of MRC handed out trophies to winners.

Name	Place	Laps	Time
Main 2WD A			
Zena, Bob	1	11	3:14.2
Orner, Ken Jr.	2	10	3:01.9
Kilian, David	3	10	3:04.9
Kilian, Daryl	4	10	3:05.5
O'Steen, Joe	5	10	3:10.5
Carretta, Joe	6	9	3:01.0
Mauriello, Richard	7	8	3:13.3
Haag, Jeffrey	8	7	3:15.2
Main 2WD B			
Adriano, Dennis	1	10	3:07.2
Orner, Ken Sr.	2	10	3:16.4
Panlilio, Joseph	3	9	3:07.0
Holway, Gregory	4	9	3:19.6
Cambra, Chris	5	7	3:15.1
Haycock, Rick	6	5	DNF
Walck, Al	7	1	DNF
Main 2WD C			
Mandano, John	1	9	3:17.1
Viscomi, Gregory	2	6	3:03.5
Anderson, Sean	3	6	3:05.9
Miller, Craig	4	6	3:08.3
Paris, Wayne	5	6	3:18.4
Main 4WD A			
Kilian, David	1	11	3:10.1
Kilian, Daryl	2	11	3:16.3
Panlilio, Andy	3	11	3:17.6
Batang, Anthony	4	10	3:03.3
Ebert, Chris	5	10	3:20.7
Betten, David	6	9	3:07.2
Klaus, Robert	7	9	3:22.7
Conseur, Damian	8	7	3:02.8
Main 4WD B			
Caparaso, Mike	1	9	3:13.8
Thatcher, Kevin	2	9	3:17.7
Currao, Paul	3	9	3:19.2
Young, Eric	4	8	3:01.6
Draheim, Dennis	5	7	3:03.6
Main Grasshopper A			
Betten, David	1	8	3:20.0
Kilian, David	2	8	3:26.7
Monetti, Dave	3	7	3:00.7
Konar, Shawn	4	7	3:24.6
Perry, Nick	5	6	3:02.3
Main Truck A			
Rogers, Richard	1	9	3:04.3
Corletto, Russ	2	8	3:14.2
Kilian, David	3	8	3:24.6
Pfister, Mike	4	8	3:26.5

IF YOU'RE PLANNING to build an Indy car, your first stop (after the bank) should be a computer terminal. Computer design is vital if you want to be competitive in full-size Indy cars. Now there's a computer-aided design for a 1/10-scale on-road racer. Precision Race Cars* (PRC) brand-new PR-7 was designed by people using space-age computer technology. As you might suspect, they came up with something that's unlike anything else on the market.

THE KIT: The PR-7 is already assembled, and all you have to add are the radio, battery, motor and spur gear. The most unusual aspect of the PR-7 is its perimeter graphite chassis. The whole suspension system is designed into the flex of the chassis. BoLink*, low-profile, Fasttrack tires and full ball bearings come in the kit. A lightweight graphite rear axle is used on the PR-7, and the rear hubs are heavy-duty, bulletproof units.

CONSTRUCTION: There's very little left to do on this car, so this is actually final assembly. Mount the steering servo onto the frame between the front steering blocks. I used a CMW* CM-10 speed controller, which mounts directly in front of the motor. PRC says they've tried both 64- and 32-pitch gears and prefer the strength of the 32s, so I used the new 12-ball Kimbrough* spur gears. As usual, I installed a Kimbrough servo-saver up front. You can mount virtually any style of body on the PR-7 and I chose a BoLink '83 T-Bird.

PERFORMANCE: While the PR-7 was designed to perform on the high banks of Lake Whippoorwill, the car works just as well on carpet and in parking lots. It weighs only 38 ounces ready-to-run, so in most cases you need to add a lot of ballast to get up to weight. You can place the weight wherever you want to. If you're running an oval, strap the weight to the left frame rail. For a roadcourse I recommend that you split the weight equally between each rail.

At Lake Whippoorwill the 1/10-scale cars with stock car bodies, almost all needed wings to handle well at high speeds. The PR-7 requires only a spoiler on the rear of the T-Bird to ensure smooth handling, because it doesn't need as much downforce on the

Associated suspension parts are used up front without springs.



by RICH HEMSTREET

Light in the fast lane.



The PR-7 is ready to race anywhere.

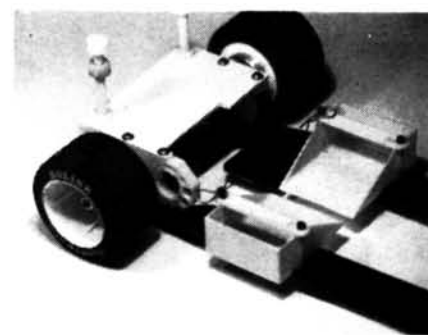
rear. A spoiler doesn't add as much drag as a wing does so a car with a spoiler has a higher top speed potential.

The only thing you have to do to improve the PR-7's handling is to use a traction additive on the rear tires. The new BoLink Max-Trak does the job well.

Most people, on seeing the PR-7, think that they could

easily cut a similar car out of a plate of graphite or fiber glass. Unless they have a computer telling them where to cut, they'll probably be spinning their wheels, and wasting time and money.

The PR-7 is just the car for



The tab in the frame behind the battery box is the location for mounting your speed controller.

someone who wants to race but does not want to spend time adjusting his suspension.

**The following are the addresses of the companies mentioned in this article:*

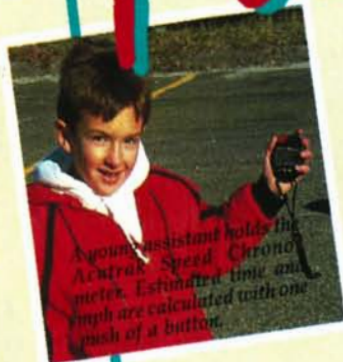
Precision Race Cars, P.O. Box 2544, Titusville, FL 32781.
BoLink R/C Cars, 420 Hosea Rd., Lawrenceville, GA 30245.
CMW International, 2101 Midway Rd., Carrollton, TX 75006.
Kimbrough Products, 1430 East St. Andrews Place, Unit E, Santa Ana, CA 92705.

Track Report
ADVANCE
ENGINEERING



ONE TENTH Funny Car

by T.J. LYN



A young assistant holds the Acutrak Speed Chrono meter. Estimated time and mph are calculated with one push of a button.

THE SMELL OF BURNING rubber and eye-watering nitromethane have been the fancy of many racing fans for years. Ground-shaking machines that pound the pavement for 1,320 feet at speeds well in excess of 250mph in less than 6 seconds are enough to make anyone's eyes water. With over 2,000 horsepower under the hood or body, the thrill for the fans, pit crews and the driver is astounding. The NHRA Funny Cars are a class of drag racing machines that fit my description and, as a result of the imagination and foresight of companies like Advance Engineering & Manufacturing Company*, you can now be an active participant in this type of racing.

**GO BALLISTIC
WITH THIS
TRICKED-OUT
DRAG
MACHINE.**



photos by LOUIS V. DeFRANCESCO JR.

SPECIFICATIONS

Type: 1/10-scale 2WD electric Drag Car
Dimensions:

Track: Front: 5 3/4 inches

Rear: 6 3/4 inches

Wheelbase: 12 1/2 inches

Overall length: 22 inches

Width: 6 3/4 inches

Height: 6 1/4 inches

Weight without battery: 3 pounds, 9 ounces

Body material: Lexan

Frame type: Aluminum/Fiber glass

Drive train: Pulley belt system

Gear ratio: 9.3:1

Tires: Front: sponge

Rear: semi-pneumatic slicks

Motor: Black Magic Quad

Speed controller: Nova 18-1

Bearings: Yes

Battery type: 7-14 Cells

Options used: Kyosho 2000 radio

Acceleration: 0-132 ft/sec.



The 1/10-scale Funny Car is one of many drag racing machines offered by Advance. The Funny Car Drag-in kit includes a set of aluminum mini-mags, Grand Prix semi-pneumatic rear slicks, scale front tires, full ball bearings, aluminum rail chassis, jack shaft belt drive rear end, machined aluminum rear axle and motor mounts with appropriate hardware. There's also a scale '87 Olds Firenza Funny Car body to put the finishing touches on a hot package.

The base kit is a solid and very competitive package with the addition of a hot 13-turn drag motor, an electronic speed control capable of handling at least 12V and a bunch of batteries. By "a bunch of batteries" I mean

as many as 14, 1/2 sub-C cell batteries. Half sub-C cells are just what their name suggests—half the size of a normal C-cell, in mAh but not in voltage. A 1/2 sub-C cell still has 1.2V but its life is much

(Continued on page 132)

ADVANCE FUNNY CAR DRAGIN ACCELERATION TEST

With 7 cells

Run	E.T.	MPH
1	4.4 sec.	20.31
2	3.66 sec.	24.59
3	3.84 sec.	23.44
4	3.51 sec.	25.07
5	3.61 sec.	24.92

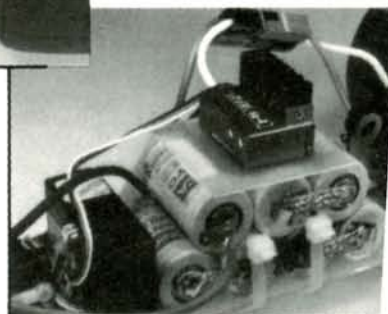
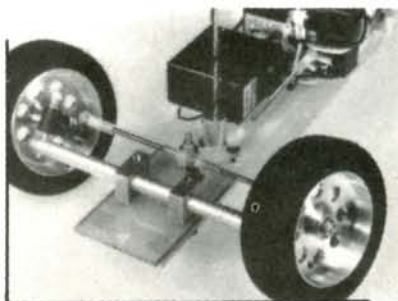
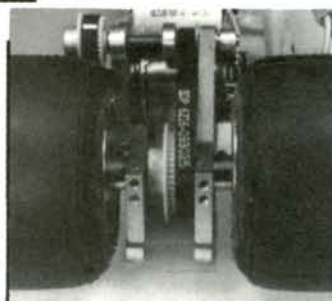
With 14 1/2 sub-C cells

Run	E.T.	MPH
1	2.98 sec.	30.201
2	2.99 sec.	30.10
3	2.81 sec.	32.028
4	2.96 sec.	30.405
5	2.78 sec.	32.374

Timing via Acutrak Speed Chronometer

Above: The Miller American Olds stares at us with fine scale features.

Right: The Advance belt drive system provides efficient power transfer to 2 1/2-inch slicks.



Left: Simple design is where it's at in drag racing.

Above: Matched Sanyo cells held in place with tie-straps, and a Nova 18-1 speed control provide a good base of power.

The Pole Position



Every NASCAR stock car goes through a simple tech inspection before going to the track.

by RICH HEMSTREET

LET'S SEE IF we can duplicate the NASCAR technical inspection for *our* racing. NASCAR inspects each car before it reaches the track for practice. First, every car is weighed. At most radio-control races, the cars are weighed too. Next, NASCAR measures the width of each car, rejecting any that are too wide or too narrow. So far, radio-control racing has only been concerned about excess width, and at many events the width is not even checked. With the move towards superspeedway racing, we'll have to consider placing limits on how narrow a car can be. The NASCAR racers have found that a narrower car goes faster, and I'm sure the same will work for us.

NASCAR also tests the cars for minimum ground clearance. I've only seen

ground clearance checked on radio-control cars that are raced on carpet, since clubs don't want their carpets destroyed by cars scraping their bottoms. Minimum ground clearance rules would be one way to keep cars from different manufacturers equal in this respect. Ground clearance also has an effect on how a car handles, and its aerodynamics on the high-speed tracks. Let's move now to set realistic limits.

The remaining two areas that NASCAR inspects are height and body contour. First, let's consider height. I have seen some very low $\frac{1}{10}$ -scale stock cars. NASCAR pushes the cars under a metal crossbar, and then measures down from the crossbar to the highpoint on the roof. This gives a very accurate measurement. It should be easy for race directors to duplicate this setup. A car that has been chopped and lowered has a great advantage over a higher car. NASCAR also measures the height of the hood, and we may want to do likewise to keep drivers from dropping the front end too low.

And now, body contour. The NASCAR inspectors have templates cut to check the contour of every type of legal body style. If a car's body is within half an inch of the template's shape, it passes inspection. We have a better system available to us. Our technical inspectors can use brand-new, clear car bodies as templates. Simply have the racer remove his car

body, so that the inspector can slip the clear, new body over it. Any irregularities in the car body will be visible through the clear body. I've been told that some bodies run better after the front end has been narrowed. With a trick paint job, the narrowing may not be visible; but using new bodies to test the race cars will catch anybody trying for an unfair advantage.

I also have a few ideas concerning points series for club racing. First, make sure that the winner of a series race will always get more points than anybody else in that race. It just isn't racing when the second-place car earns the same number of points as the winner. Bonus points for TQ (Top Qualifier) are all right, but it shouldn't be possible for the TQ to score more points than the A-Main winner.

Many clubs use a toss-out system on their race series points. Let's say they have a 6-race series with one toss-out.

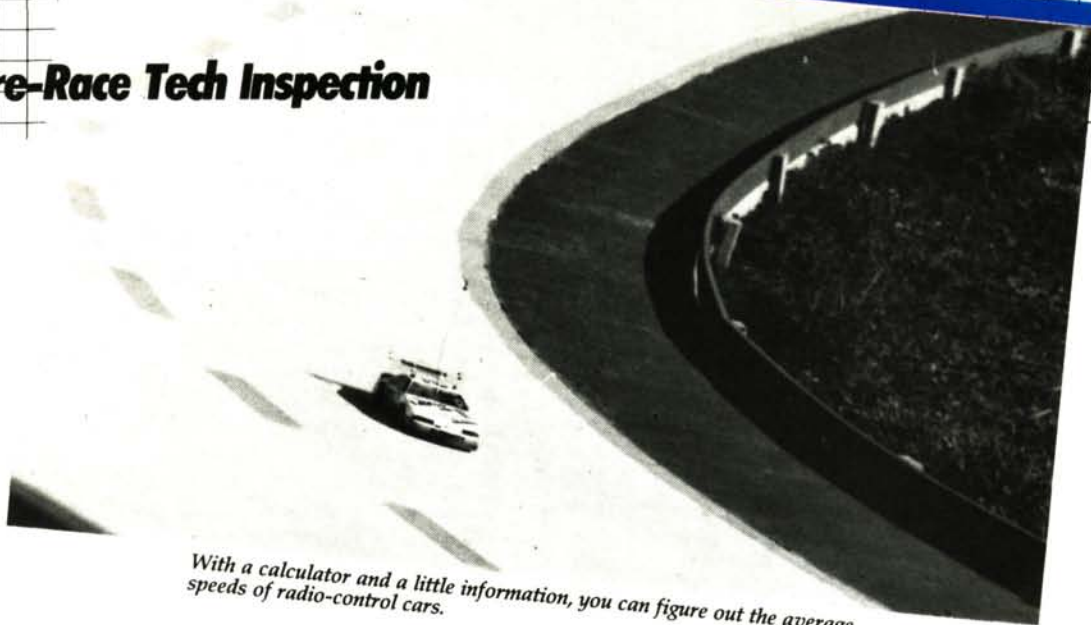


Without measuring, you can't tell if this car is too tall or not. The hood looks suspiciously low.

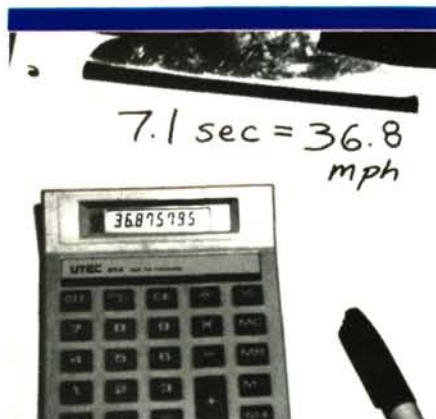


The ground clearance should be checked on all cars.

Pre-Race Tech Inspection



With a calculator and a little information, you can figure out the average speeds of radio-control cars.



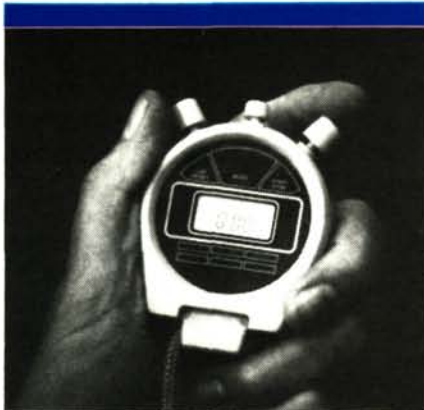
Can you determine how fast this car is going?

That means only your best five finishes will count in the final standings, and if you have one bad week, or miss a race, you can still do well.

How many points should the winner receive? This may vary, but I say the more, the merrier. Why? Because it permits more points to trickle down to the lower-place finishers. I'd like to see the winner receive at least 100 points, and if you have more than 50 drivers participating regularly, the winner should receive at least 200 points. While larger points totals will mean more bookkeeping, it's worth it. The lower-score finishers are frequently beginners, so don't have a points system setup where they only earn

one point each for a day's race, while the winner scores a hundred.

The last-place finisher should, on a regular basis, earn approximately 50 percent of the winning car's total, so ensuring that the rookies will have enough points in a series to stay interested. Also, never put a minimum number of races entered as a qualification for earning points. New drivers, who start racing in the middle of a series, would like to see their names on the points list after their first races. All drivers with earned points in the series should be listed on the scoresheets every time the sheets are published. Remember, we need to keep new drivers interested so



The stopwatch ends speculation on a given car's average speed.

that they keep coming back.

On the subject of speed I've heard all sorts of wild claims about radio-control cars. How can you tell what speed your radio-control car is really going? You could buy a radar gun, but they don't always work on small items, such as a 1/12-scale car. I have an easy, less expensive way to figure out how fast a car is going on the track. First, measure around the track following the center line. Write down your total footage. Next, use a calculator to multiply the distance around the track by .6818181. Write that figure down too. Now, all you need to figure out how fast your car is going is a stopwatch. After timing the car with a stopwatch, take the second number you wrote down, and divide it by the number of seconds the car took to circle the track. The answer is how many miles per hour the car averaged on that lap. Down at Lake Whippoorwill, a 7.1-second lap means an average speed of 36.8mph. By using these calculations, we no longer have to speculate on how fast our cars are running.

Try figuring out how fast your cars are really going. Next month I'll discuss myths about scale speeds.

Until then, Rich Hemstreet, c/o *Radio Control Car Action*, 632 Danbury Road, Wilton, CT 06897. ■

RC10

UPDATE

THE LATEST HI-PO
GOODIES TO KEEP
YOUR RC 10 AT
THE HEAD OF
THE PACK.



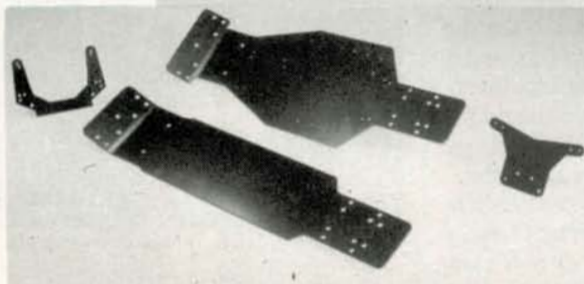
by STEVE POND

SINCE ITS INTRODUCTION in the winter of 1984, the Team Associated* RC 10 has been riding the crest of an R/C tidal wave, seemingly with no land in sight—until this year's World Championships. The RC 10 fell from grace at this year's World Championships in England, losing to the Kyosho Ultima. It's anyone's guess as to why, but it has put fear into those who'd previously had faith in the absolute superiority of the RC 10. Many readers are so concerned that they felt compelled to write to us.

I'm not here to discredit the victorious

Ultima. This car, along with the RC 10, is at the highest level of competition. However, the RC 10 is not out of the picture by any stretch of the imagination. Since its

inception, the RC 10 has earned a tremendous number of victories: the '84 and '85 Off-Road Nationals, the '85 IFMAR World Championships, the '86 and '87



The Trinity Off-Road Graphite Chassis, the larger of the two above, was cut to the same configuration as the skinny oval chassis to save weight. Graphite shock towers from Trinity were also used.



Aside from its blinding speed and beautiful cornering, the RC 10 soared like an eagle.



Team Losi Aluminum Wheels are not only beautiful, but they're lighter than any other aluminum wheels because they only replace the outer halves of the stock wheels.

Japanese Off-Road Championships, the '86 and '87 Australian Off-Road Championships, the '87 CRP Challenge, the '87 Western Off-Road Nats, numerous regional championships... and the list goes on and on. The Ultima also raced in some of these races and, after dominating the racing circuit for many years, the RC 10 now has to share some of the spoils with the Ultima. Think about it. When was the last time Dale Earnhardt or Bill Elliot won every NASCAR race in any particular season? It's never happened, and it's just as unlikely that the RC 10 would win every time.

Owing to the RC 10's popularity,

CONSTRUCTION: This is the fourth time we've featured the RC 10 in *Radio Control Car Action*, although each time in a different configuration. We've given sufficient information on the construction of the basic kit, so I'll now concentrate on some of the many aftermarket parts that you can use to enhance the RC 10's performance.

First, all the nylon parts were dyed with clothing dye to add a little extra color to the RC 10. Because these parts are molded in nylon, they take clothing dye very well, and there's another positive feature. To dye the nylon parts they have to be boiled, and the nylon becomes more

composite shock towers. The wide-front-end chassis widens the front end to the ROAR legal limit. With a wider front end, the car will have more stability in the corners. Also, by using composites, the overall weight of the car is reduced without sacrificing strength.

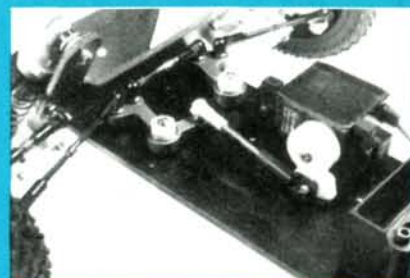
Next, I used the Team Pit Stop* axles, which are fastened with a screw instead of an E-clip. This screw keeps the front wheel and axle from coming loose after a hard hit. To connect the upper links and steering linkage, I used Du-Bro* turnbuckles. These allow alignment and camber adjustments in just seconds without having to remove the ball ends. Simply



The almost complete chassis gives you an idea of how much weight was stripped off the stock chassis.



For smoother differential operation, a Bud's Differential Pinning Kit and Team Losi 64-Pitch Gears are used.



The slop-free linkage used on the RC 10 was powered by the new Futaba FP-S135S Mini Racing Servo.

many manufacturers have developed their own line of aftermarket "go fast" parts to enhance the performance of this formidable competitor. This article will give you more information about the parts that are available for the RC 10.

flexible and resistant to breaks. When the parts are dry, the assembly can begin.

To start, assemble the front suspension arms and attach them to the front portion of the chassis. I chose to use a Trinity* composite wide-front-end chassis and

turn the turnbuckle with the included wrench.

At the other end of the steering linkage was a pair of Team Losi* Ball Bearing Bellcranks. These replace the original

(Continued on page 82)

QUARTER SCALE

by RICH HEMSTREET

SUPER NATIONALS

Sponsored by King 8 Hotel & Casino



Even sprint cars can make perfect landings, sometimes.

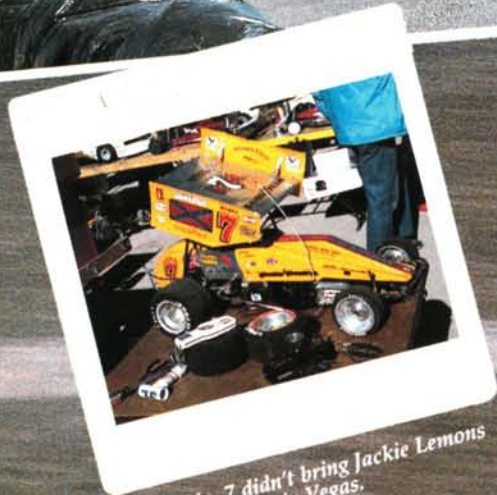


A sprint car takes the green flag on its qualifying run.

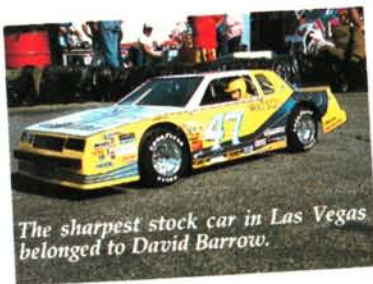


THE KING 8 HOTEL and Casino in Las Vegas hosted the Supernationals. Drivers from all over the world competed for a cash purse. With nearly 150 entries, it was the largest 1/4-scale event ever held.

The oval track was set up on the King 8 Hotel property. Because there were some light poles



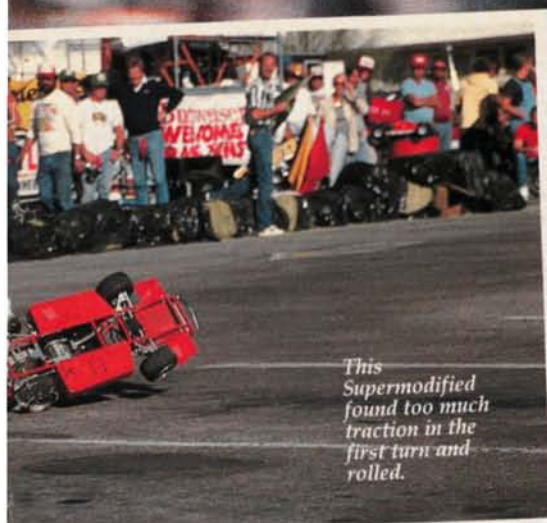
The No. 7 didn't bring Jackie Lemons any good luck in Vegas.



The sharpest stock car in Las Vegas belonged to David Barrow.



Ralph Burch Jr.'s WCM factory-sponsored sprinter.



This Supermodified found too much traction in the first turn and rolled.

innicker drove the No. 96 Super-



Ken Leslie with his hand-built 1/4-scale trailer and Snap-On Tools-sponsored, sprint car.

Gary Carter won Concoors with his beautiful paint job on his RACO supermod.



A \$5000 Cash Purse Drew Racers From All Over The Country.

Vegas sponsored the 1/4-scale the country came to race for the \$5,000 is was the largest

parking lot.
e way, the track

(Continued on page 80)

Roger Newell brought this sprinter from Minnesota to finish third in the A Main.



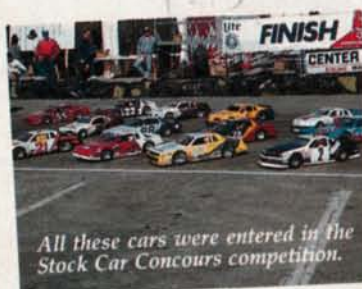
Robbie Schmidt's car looked like it came directly from the Daytona 500.



The new QRS Stadium racer was on display.



All these cars were entered in the Stock Car Concoors competition.



SUPER NATS. WINNERS

STOCK 100 LAPS

1. L. Benton	Auto Eng. 100
2. J. Rahe	RACO 100
3. R. James	RACO 96
4. G. Kyes	RACO 93
5. R. Newell	WCM 91
6. R. Sheehan	RACO 84
7. J. Woods	WCM 73
8. R. Burch	WCM 49
9. C. Saladin	WCM 26
10. M. Schmidt	RACO 20

SPRINT 40 LAPS

1. R. Burch	WCM 40
2. L. Benton	WCM 38
3. R. Newell	WCM 38
4. R. Matthees	WCM 37
5. C. Borgman	WCM 36
6. G. Kyes	ALVES 33
7. L. Chapin	WCM 15
8. R. Williams	WCM 4

SUPERMODIFIEDS 40 LAPS

1. R. Sheehan	RACO 40
2. J. Davis	RACO 39
3. R. Newell	RACO 38
4. R. Matthees	RACO 34
5. M. Schmidt	RACO 32
6. R. Imhoff	RACO 8
7. R. Burch	WCM 0



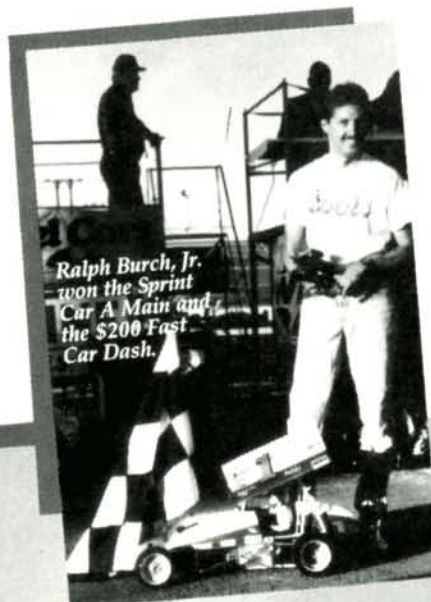
The stock car races provided the closest competition.

was really quite short for these cars, and the traction was very poor, especially coming out of the turn onto the main straight. A lot of racers spun out at that point. Hay bales were used for outer barriers on the track, and these protected the spectators without damaging the cars that ran into them.

Three classes of cars raced at the



Lorenzo Benton won the 100-lap stock car feature with his Auto Engineering car.



Ralph Burch, Jr. won the Sprint Car A Main and the \$200 Fast Car Dash.

Supernationals: sprint cars, supermodifieds, and stock cars. It seemed as though the stock cars were the easiest to get hooked up, and this was probably because they have the lowest power-to-weight ratio.

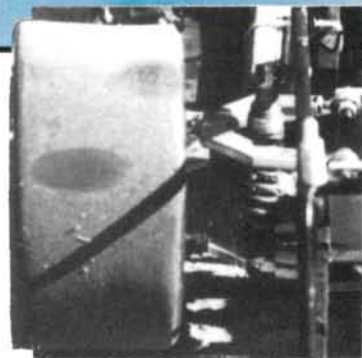
Tires received a lot of attention. Some drivers used oil of wintergreen or other traction additives during practice. However, the 1/4-scale rules don't permit the use of any additives, so these drivers had to find other tires to race on, or risk disqualification. One hot setup for tires was to cement a strip of a rubber tire to the foam slicks, after grinding down the foam tire. That way, the diameter of the tire didn't change. Bicycle tires were the most often used on these modified tires.



This racer carried the Mothers Against Drunk Driving (MADD) logo.

One team from Minnesota brought a full-scale Hoosier sprint car tire, and this provided enough rubber for several sets of 1/4-scale tires. The Hoosier tires gave the best traction on this slick track. It seemed that the WCM* cars needed the modified tires more than the other brands of cars.

Gear ratios of 4.7:1 down to 7:1 were used. The drivers with 7:1 ratios wanted more acceleration down the short straights. The drivers using the 4.7:1 and 5:1 ratios were trying to soften the throttle response, so that they could keep the power on coming out of the corners without spinning the tires. With



The Auto Engineering Stock Car has heavy-duty A-arms.

SUPER NATS. INNOVATIONS:

THE KING 8 Supnationals drew nearly 150 entries for the largest 1/4-scale race ever. All were oval track racers, but there's evidence

funny cars and the Grizzly off-road car. There's now more diversity in 1/4-scale cars than in any other scale. Here's a list of the manufacturers of 1/4-scale cars.



The QRS Stadium Racer without its body.

that 1/4-scale isn't limited to the ovals.

QRS* was in Las Vegas displaying their exciting, new off-road Stadium Racer pick-up truck. This front-engined Toyota is targeted for a new style of 1/4-scale racing. The Stadium Racer has great suspension and handles the jumps and bumps really well. The workmanship appears to be of the highest quality.

Performance Drag Products* also brought two 1/4-scale cars to display. They sell 7-foot-long Cobra Top Fuel rails. These cars are for serious, high-speed drag racing and have a built-in nitrous-oxide system for that extra burst of power.

Even though these cars are high-performance racers, they still have on-board recoil pull starters, and that makes racing simple.

I also recently saw Pacesetter's* new, 1/4-scale, Formula-1 prototype. The F-1 will join their line-up of top fuel rails,

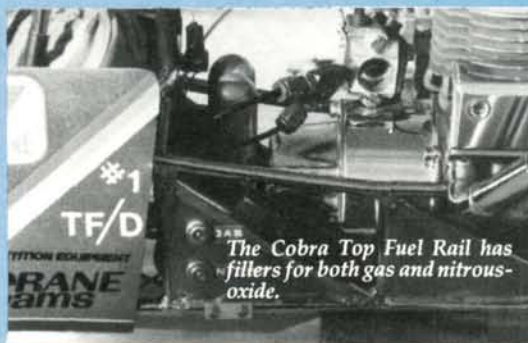
funny cars and the Grizzly off-road car. There's now more diversity in 1/4-scale cars than in any other scale. Here's a list of the manufacturers of 1/4-scale cars.

Alves, 530 Reed St., Santa Clara, CA 95050: sprinters.

Auto Engineering, 102 Pebblebrook Dr., Clinton, MS 39056: stocks and supermodifieds.

Pacesetter, 930 W. Hyde Park Blvd., Inglewood, CA 90302: top fuel rail, funny car, off-road, sprint and Formula 1.

Performance Drag Products, P.O. Box 537, Buffalo, TX 75831: top fuel rail



The Cobra Top Fuel Rail has fillers for both gas and nitrous-oxide.

QRS, 44108 Alsace Lane, Hemet, CA 94344: stadium racer.

RACO, 1400 C East St. Andrews Place, Santa Ana, CA 92705: stock cars, supermodifieds, off-road.

WCM, Rt. 2, Box 207A, Buffalo, TX 75831: stocks, sprinters & supermodifieds.

When you write to them, let them know you read about them here in *Radio Control Car Action*. ■



This foam tire has a section of a bicycle tire glued to it.



A Hoosier sprint car tire was used to make this rear tire.

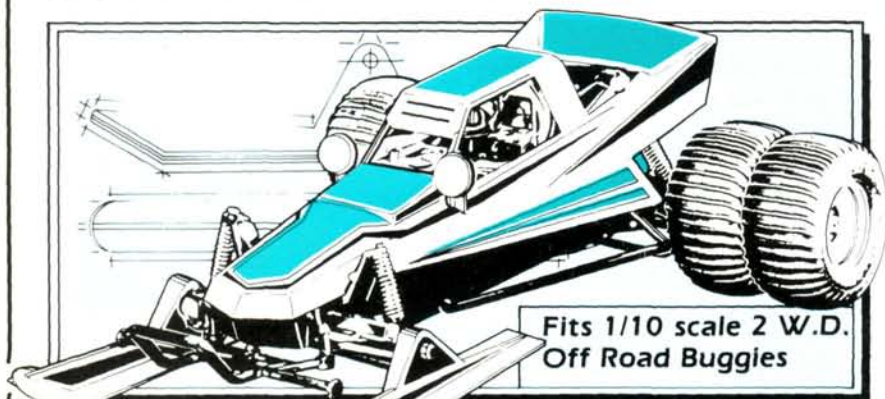
such different gearing it was surprising how closely matched the cars' performances were. A short, slick track tends to even out the competition. It puts the emphasis on driving, and not on horsepower or speed.

Some of the supermodifieds were using styrofoam or balsa wings built with R/C aircraft technology. These wings were lighter than the aluminum wings used by most drivers, and helped to lower the center of gravity for better handling.

After practice, the qualifying began. Each car was timed on four solo laps

(Continued on page 94)

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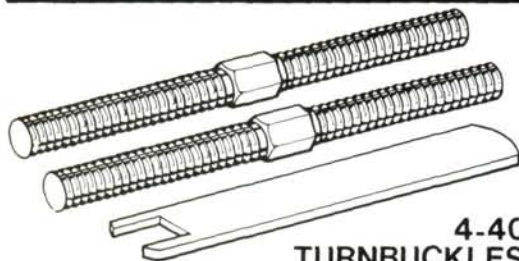
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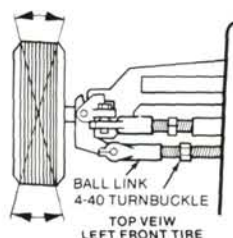
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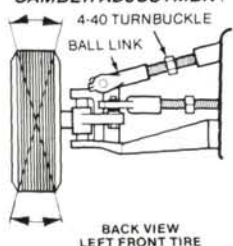
No. 2156 4-40 TURNBUCKLES WITH WRENCH

No. 2157 4-40 TURNBUCKLES

TOE-IN, TOE-OUT ADJUSTMENT



CAMBER ADJUSTMENT



DU-BRO PRODUCTS 480 Bonner Road Wauconda, Illinois 60084

RC 10 UPDATE

(Continued from page 69)

servo-saver/bellcrank assembly with a more solid, durable system that's virtually friction-free. Attach the servo-saver to the servo itself.

Now move to the rear end. The next sequence covers the assembly of the differential. I've heard a great deal of speculation on the subject of what to do with the "stock" differential on the RC 10. As far as I'm concerned, this differential is fine. I added a Team Losi Steel Differential Tube to give the unit more durability and more precise operation. To take this one step further, a Bud's Racing Products* Differential Pinning Kit was added to prevent slipping. When these differential rings slip, the power may shift more to one wheel causing erratic handling. Between the differential rings I was going to use a Team Losi 64-pitch spur gear, but I wasn't able to because of the double rows of differential balls. The Bud's Differential Pinning Kit interfered with the inside row of differential balls, so I used a Trinity 64-pitch gear that resembles the stock differential ball arrangement. At this point check the fit of the spur gear over the differential tube. Sometimes the gears may be tight on the tube, and this will cause power to shift to the right wheel and make handling impossible. The gear should rotate freely on the differential tube. Once I'd completed the differential I bolted it to a Litespeed* heatsink. This keeps the running temperature of the motor lower and allows longer running times and motor life. I then covered this assembly with a Parma* Differential Cover. This cover allows adjustment of the differential without having to remove the cover.

My only problem during the assembly of the rear end was a black oxide coating on the dog bones and the drive cups that caused some binding when they rotated. This coating should be removed from the parts, or they should be worn-in before the car is put on the track.

Next in the assembly process are the shock absorbers. Once again, these are just about as good as they come, but there are a few items that will improve their operation. I used a full range of CRP* Shock Oils to make the RC 10 adaptable to a variety of terrains. Along with the shock oil, a set of CRP Pressure Gaskets was used in the shocks. The pressure gaskets expand as the shocks are compressed and the oil is displaced by the piston. Without these gaskets the oil would have nowhere to go, so there's a

(Continued on page 84)

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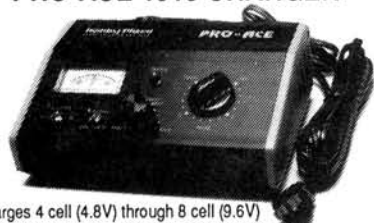
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RC 5859 Porsche 959	294.50	\$210.00
RA 5860 Monster Beetle	178.60	\$125.00
RB 5861 Striker	116.95	\$88.00
RA 5863 Lunchbox	116.95	\$81.85
RA 5862 HotShot	224.95	\$159.95
RA 5864 Toyota Celica Rally	299.95	\$203.95
RA 5865 NEW!! Clodbuster	305.00	\$208.95

RC 10 UPDATE

(Continued from page 82)

need for space to accommodate the oil. The gasket expands and contracts as the shocks move and it keeps air from the piston. I also used the original gaskets on the outside for some added insurance. I fastened the shocks to the shock towers with the Team Pit Stop stainless steel hardware, so increasing durability. I used Bud's Racing Quick-Change Spring Retainers to allow me to change the springs without removing the shock end.

The motor I chose was the Team Losi Revolution II motor. This motor is specifically designed for use with two-wheel-drive cars and has rather forgiving performance characteristics. The Revolution IV is also a great motor, but I wouldn't recommend it to anyone who doesn't have pretty good control of his throttle finger.

On the other end of the motor wires was the awesome Tekin* ESC 190 electronic speed control. I don't need to go into how this speed controller performs, as its accomplishments speak for themselves.

A battery pack assembled with Team Losi Prime Time Sanyo Matched Cells provides the power. These cells don't come assembled but, according to RPS*, most assembled packs also use matched cells, and the cells are all the same color! After assembling the pack, I covered it with Team Pit Stop battery shrink-wrap and attached a pair of CRP Dean's pin connectors. I've used just about every connector, and these haven't failed me yet. They're also very lightweight. The guidance system for the RC 10 was none other than the Futaba* FP-T3PG Magnum. This is the most trouble-free system I've ever used and it's infinitely adjustable. An all-new FP-S135S mini servo was used for guidance. This is smaller than the popular S32/S132 which most of you are accustomed to, has more output torque and virtually the same transit time. I recommend this servo to any serious racer.

To cover the whole thing, a factory-painted RC 10 body was used along with a Bud's bi-level rear wing. This wing is the same type that was used on virtually every top car at the Car Action Weekend, and Bud Bartos tells me that it's had the same success in off-road racing.

This wraps up the assembly. A correct combination of the many available parts will ensure good RC 10 performance. Here, I just want to give you a little insight

(Continued on page 86)

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RC 10 UPDATE

(Continued from page 84)

into some of the options that are available to you.

PERFORMANCE: It's difficult to do justice on paper to the performance of this new breed of RC 10, as it's something that has to be seen to be believed. However, I'll give it my best shot.

On any track you'll always give considerable thought to the suspension, differential and wing adjustments, shock oil and gear ratio requirements, and tire combinations, if you really want the best possible handling. The track I ran the new RC 10 on is a flat oval with a few large table-top jumps. For oval racing, I gave the differential a little extra tightening and went with a heavier shock oil. There were some jumps so I had to soften it a little, and a 30W oil seemed to be best for me, but you'll have to experiment for yourself.

After getting the suspension as good as possible, I tried different tire combinations. The best combination was the stock RC 10 rears with a pair of Pro-Line front knobbies. These cured a little understeer problem I'd had using a set of the Diamond-

(Continued on page 91)

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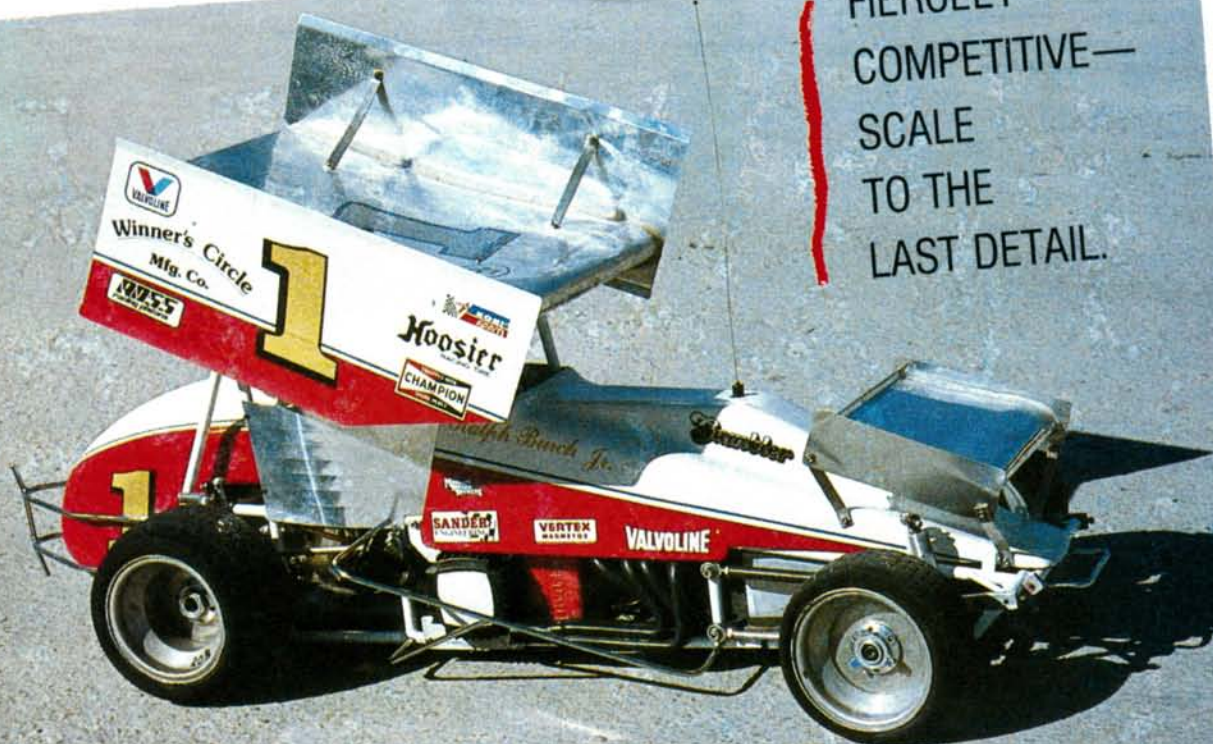
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Track Report

WCM QUARTER SCALE

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SPRINT CAR

by JOE BRUNI

JUST AS 1/4-SCALE RACING is coming increasingly to the forefront, the WCM* team of Buffalo, Texas, led by the Cheek family with over 25 years' experience in full-scale racing, has reduced the Gambler sprint car to an uncanny 1/4-scale.

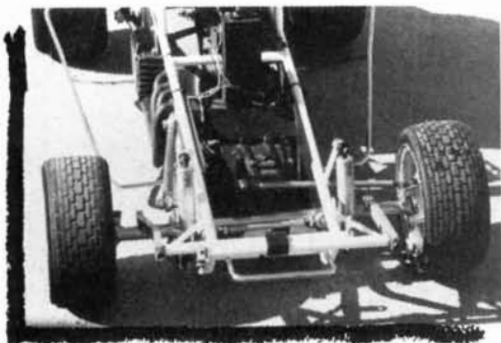
THE KIT: The kit was shipped to me directly from

the WCM factory. The car was packed so as to avoid damage during shipping. As soon as you open the box, begin separating the many labeled bags into order.

The kit includes a long list of features and every bolt, nut and part required to race the car competitively. The 26-page assembly manual is an

excellent source of construction information as well as detailed photographs, easy-to-follow written instructions and advanced techtips. The nucleus of the sprint car's construction is its virtually indestructible welded tubular steel frame. Couple this with the fully adjustable suspension system that includes oil-dampened shocks, aircraft-aluminum radius rods, torsion bars, bird cage and Jacob's ladder, and you've got a performance package.

Power is supplied by a Zenoah 1.3-cubic-inch 2-stroke engine that requires a gasoline-oil mix of 50-to-1 for top rpms. The kit includes the revolutionary clutch-conversion belt-drive system that utilizes a belt drive directly from the engine to a centrifugal clutch assembly which is then connected to the rear axle by a linked chain.

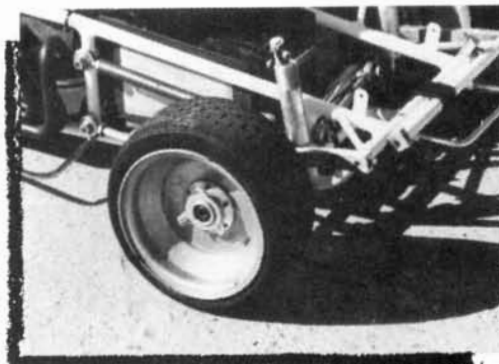


The front suspension is fully adjustable for all track conditions.

The body is composed of high-impact ABS plastic and is ready for paint. The air foils are made of pre-rolled, polished aluminum sheets that are lightweight and, when joined with silicone gel, functional and durable.

My kit arrived with a few choice options such as a 1/4-scale driver, helmet and Hutch's exhaust headers.

ASSEMBLY: I was extremely impressed with the precision-fit. The first step is preparation of the frame and aluminum parts. The frame is clean of flux and excess weld, thus requiring only minimal filing, sanding and a final polishing with steel wool before paint application. The manual suggests using Dupont Imron paint on the chassis



These knock-off hubs are available from WCM.

because of its superior covering quality, flexibility and imperviousness to fuels such as gasoline, alcohol and nitro. But beware: **IMRON IS EXTREMELY TOXIC** to the lungs and requires that the painter use a well-filtered respirator mask while painting.

Set the frame aside for at least 24 hours before handling, allowing the paint to set evenly. During this time, continue with the final shaping, sanding and polishing of all the aluminum parts. If you're a perfectionist, as I am, you'll spend a great deal of your assembly time creating *chrome* luster on each part. I used a belt sander to remove some of the rough machine marks then used increasingly finer sandpaper grits from 800 to a final once-over with 1500. By attaching a soft polishing wheel to a bench grinder and using an occasional touch of jeweler's rouge it was easy to achieve a good sheen.

To construct the sprinter, you'll need to provide hex-head wrenches of various sizes, screwdrivers, and patience. Total assembly time: approximately 27 hours, including frame assembly, aluminum preparation and painting. Instruction begins with the suspension group. Every torsion bar is color-coded for orderly installation. Since the car can be set up for dirt or asphalt, the torsion bars, bar arms and stops

are all completely adjustable by means of hex-head screws. The heart of the car's performance is a unique rear axle and suspension system. The rear axle and sprocket are suspended and connected to the chassis at 5 different points. Four of these points are composed of a torsion

(Continued on page 119)



The welded tubular frame is modeled after the full-scale sprint car.

RC 10 UPDATE

(Continued from page 86)

Back tires that are used to cure oversteer. These two types of tire should cover any track conditions. After going through three-and-a-half battery packs, the RC 10 was ready to make its assault on the track.

With the Revolution II motor, the power comes on very smoothly with a little less low-end torque. This helped me around the slippery corners by not exploding with a burst of power while coming out of a corner. But don't get the impression that this is a slow motor; the car is an absolute rocket. As it heads down the straight, the high caliber of my car became increasingly apparent. Even though the track was oval it had obstacles that usually put the suspension to the test. Each little bump was absorbed without changing the path of attack. The jumps were a problem at first because I was letting off the throttle before the car was airborne and this pulled the nose down on landing. After a few tries, I found that adding a little throttle at the height of these jumps kept the nose in a good attitude for landing. Remember not to hit

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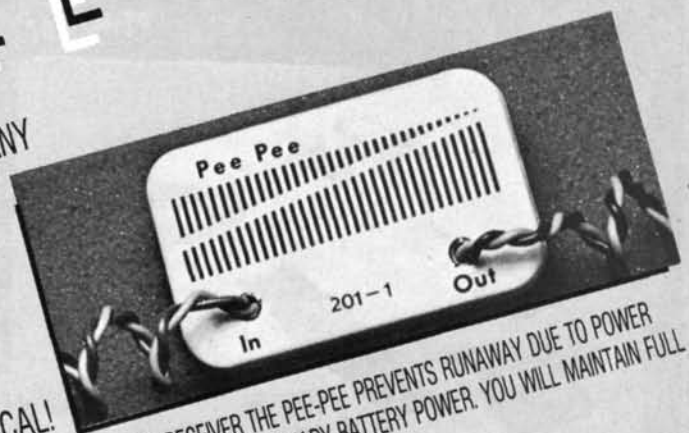
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RC 10 UPDATE

the jumps at high speed, as time spent in the air is time wasted, and you can make much better time on the ground than in the air.

The beauty of the RC 10 is its adaptability to virtually any terrain. This is what brought the RC 10 to so many victories. The fact that it lost this year in the World's doesn't make it a poor car, and I'm not saying this because I want everyone to go out and buy one. I've successfully raced the RC 10 quite a few times and it would be foolish to count it out because it lost the championship. The Ultima is tough competition, but the RC 10 can face the challenge. Look out for our next issue when we'll tell what happened when we took this RC 10 and a trick modified Ultima and went head-to-head in the R/C duel of the decade!

**The following are the addresses of the companies mentioned in this article:*

Team Associated: Associated Electric, 3585 Cadillac Ave., Costa Mesa, CA 92626.

Trinity, 1901 E. Linden Ave. #20, Linden, NJ 07036.

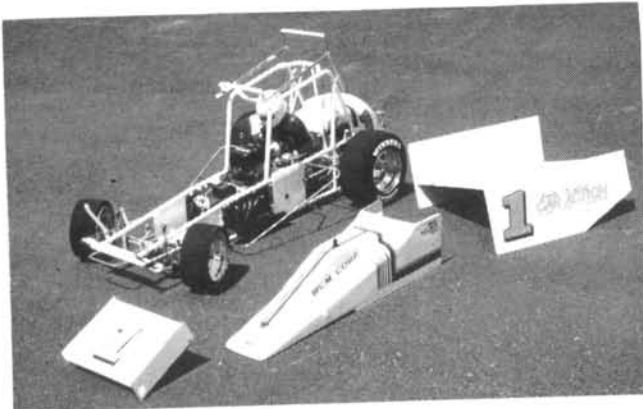
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(Continued on page 94)

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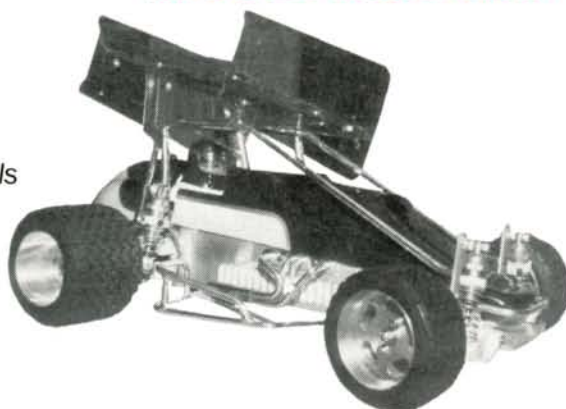
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(Continued from page 92)

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Team Losi, 1655 East Mission Blvd., Pomona, CA 91766.

Bud's Racing Products, P.O. Box 601, Amherst, OH 44001.

Litespeed, E. 3703 3rd, P.O. Box 4765, Spokane, WA 99223.

Parma International, 13927 Progress Parkway, North Royalton, OH 44133.

CRP, 3250 El Camino Real, B-3 Atascadero, CA 93433.

Tekin, 2411 S. El Camino Real, San Clemente, CA 92672.

RPS Distributing, 1655 East Mission Blvd., Pomona, CA 91766.

Futaba Corp. of America, 555 W. Victoria St., Compton, CA 90220.

SUPER NATS.

(Continued from page 81)

around the track, and the sprint cars were the first group to qualify. Gary Kyes took TQ honors, driving his Alves sprint car. Kyes' time was 6.183 seconds. In the supermodified class, Jack Jacobs drove his highly modified RACO car to a 6.233-second top-qualifier run. When the stock cars hit the track, it was once again Gary Kyes on top. Kyes drove a RACO* T-Bird around the tight oval in 6.833 seconds.

After qualifying, the heats were set. First place in each heat transferred directly into the A Main. Second place went to B Main, third to the C, and so on. Each racer had only one heat race, so the pressure was really on. The ten-lap sprint and supermodified heat races provided a lot of excitement. The stock cars ran 25-lap heats. Most of the stock car heats were run without any caution flags.

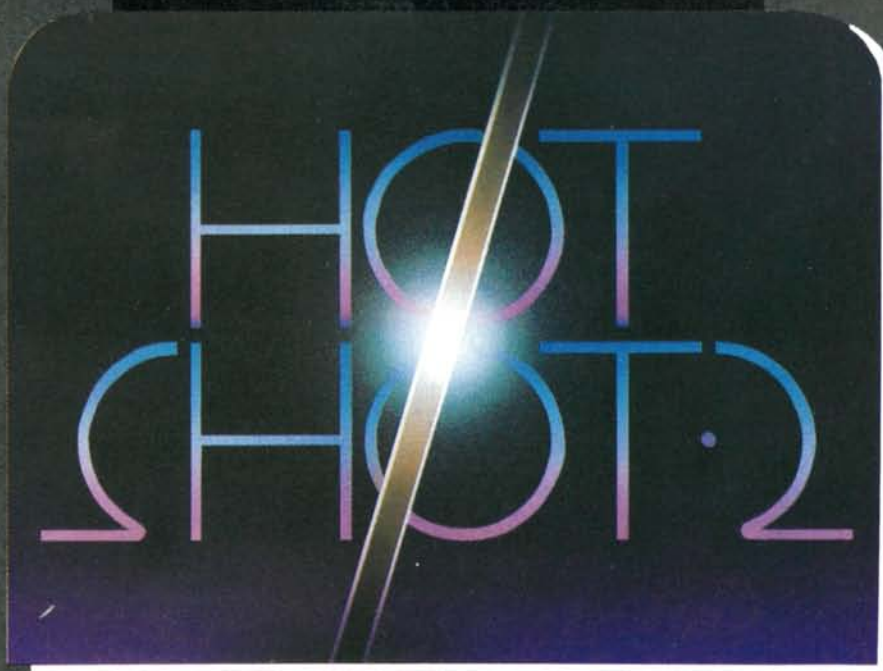
The winner of each sprint and supermodified Main transferred into the next higher Main. In the stock cars, the top four finishers transferred to the next Main. Transfer spots really add importance to the lower Mains, especially when the A Mains were where the biggest part of the \$5,000 was awarded.

The sprint car A Main was 40 laps long, and the WCM factory driver, Ralph Burch Jr., drove a smooth race to win. Lorenzo Benton finished second with Roger Newell coming in third.

Jack Jacobs ran away with the supermodified 40-lap A Main, and Rick Sheehan came in second, followed by John Davis. At the post-race technical inspection

(Continued on page 103)

M R C / T A M I Y A



Track Report



Photos by WALTER SIDAS

by STEVE POND

LESS WEIGHT AND IMPROVED SUSPENSION REFINE THIS PROVEN DESIGN.

IN THE WINTER '86 issue of *Radio Control Car Action*, Rich Uravitch completed a track report on the MRC/Tamiya* Hot Shot. The car was an admirable performer, but in the long term, presented enough minor problems to make it less attractive for the serious R/C enthusiast. For one, although it had a rugged chassis, the Hot Shot was found to be just a little too heavy to keep



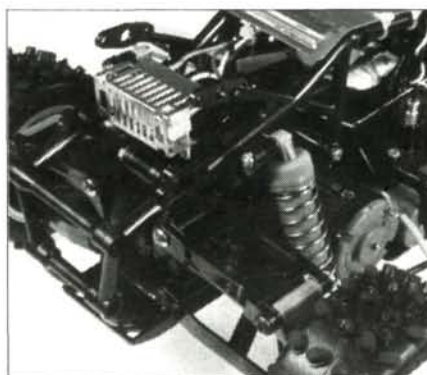
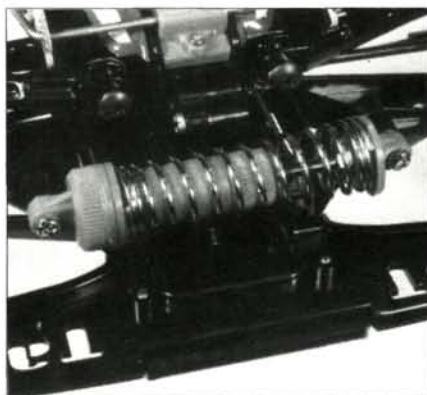
pace with its other 4WD competitors. Other problems the Hot Shot owner faced were the inaccessibility of the radio equipment due to the sealed chassis design, the failure of its aluminum-clad resistors for the speed control (resulting in full speed only), handling limitations due to its monoshock design, and an occasional snag on the battery pack from the lack of a skid plate on the underside of the chassis.

After receiving many letters from concerned Hot Shot owners, Tamiya decided to make some revisions to the Hot Shot that would make it a more competitive R/C car. The result of this research and development is the Hot Shot II.

THE KIT: At a glance, the Hot Shot II chassis looks very much like the original Hot Shot. The kit features a front anti-roll bar (rear roll bar has been tossed on the Hot Shot II), adjustable oil-filled dampers front and rear, low-profile oval block pattern tires front and rear, 3-step forward and 2-step reverse speed control, plastic frame/chassis, RS-540S motor, double-wishbone suspension front and rear, and a polycarbonate body and wing. Upon further inspection I found that it is essentially the same chassis with some subtle changes to make it more competitive.

The Hot Shot II is still a shaft-driven 4WD car with two gear-type differentials and ball bearings supporting each side of the differentials

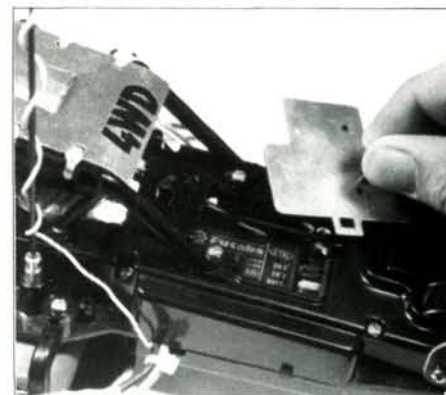
at the gearbox joint. Each end of the drive shaft is fitted with thrust bearings at the propellor joint to keep the drive shaft from applying any unnecessary



friction to the drive gear. The remainder of the high-friction points are fitted with a standard plastic bearing that is included in many Tamiya kits. The chassis is identical to the Hot Shot in that it is still a sealed bathtub, but

Tamiya has added an access hatch over the radio gear to make adjustment or minor repair a little less time consuming.

On the suspension end of things, there are quite a few similarities regarding the upper and lower A-arms, suspension geometry, and steering apparatus. New to the Hot Shot II are some one-piece hardened-steel dog bones to replace the bulky three-piece shafts on the Hot Shot that were pressed together. Other new additions are the upright shocks in the rear and the horizontal mono-shock in the front. The new shocks are the same that are used on the Super Shot and the Big Wig. They're more responsive to adjustment and changes of oil viscosity, and they're less prone to suck air past the piston because of the crescent-shaped rubber cup gasket. This gasket allows you to fill the shock to the top with oil and seal



Above Left: The Hot Shot II utilizes the new Tamiya oil-dampers that are far superior to the old design.

Above: Also new to the Hot Shot II is this radio access hatch for inspection and minor repair.

Left: The rear mono-shock was scrapped on the Hot Shot II in favor of a pair of the new oil dampers. Also missing on the Hot Shot II are the old aluminum-clad speed-control resistors that were replaced with the standard 3-prong resistor. Note Black Endurance motor for a little extra kick!

it without any air trapped inside. The oil displaced by the piston rod under compression forces the gasket to stretch upward and then return when the car comes back to its original ride height.

(Continued on page 128)

AM

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SUPER NATS.

(Continued from page 94)

tion, Jacobs was disqualified for illegal engine modifications. That moved Sheehan into first place and gave Davis the TQ honors.

The stock car A Main had to be shortened from 125 laps to 100 laps because darkness was setting in. Gary Kyes took the lead early, only to lose a rear tire. As Kyes pitted, the event became a two-car race between Jon Rahe and Lorenzo Benton. When Kyes came back onto the track, he still had the fastest car, but he didn't have enough time to catch up. In the end, Benton beat Rahe for first place. Benton was driving an Auto Engineering* car, while Rahe was driving a RACO T-Bird. Rick James came in third, followed by Kyes in fourth.

Throughout the day the cars were watched by a large crowd of cheering spectators. Quarter-scale racing can really get the public's attention. After the Mains were finished, the King 8 came up with an extra \$600 for three fast car dashes. The top four qualifiers in each class ran a five-lap, \$200, winner-take-all dash. Ralph Burch took \$200 in the sprint car dash. Mike Schmidt won the supermodified dash, and then won the stock car dash as well. Schmidt picked up \$400 for 10 laps of racing. Not bad!

The purse paid through the D Mains in both the sprint and supermodified classes, and through the C Main in the stock car class. While the competition was close, there was a high degree of good sportsmanship. The rules for running 1/4-scale events need some work to cut down on the rough spots, but, taking into account that this was the largest race these organizers have run, it went quite well.

Quarter-scale should be exciting in 1988 with larger purses and more com-

(Continued on page 106)

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(Continued from page 103)

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(Continued on page 116)



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DRAG RACING

(Continued from page 106)

probably dial in at about 3.4 seconds for the race. This would give you a 5-second handicap for the race. In other words, the timing sequence would start five seconds sooner for your lane which would allow you to start five seconds before your opponent. This gives you a 5-second head start on a car that's five seconds faster than yours.

Get the picture? Both cars should be coming across the finish line at the same time. The purpose of the dial-in time is to keep the racer honest. If the racer gives a dial-in time of 3.8 seconds and the car actually runs a 2.8, he'll lose because he went faster than the dial-in time. This is what they call a "break-out." That's why you may want to dial in a slightly faster time and avoid breaking out as you might just go a little faster than you expected.

This may all sound a little confusing, but once you go through the paces, it's a rather simple idea that's a lot of fun.

On the larger-scale side of this growing hobby are the huge, 1/4-scale drag machines. These gas-powered quarter-pounders are carving a big niche for themselves in the drag racing world. In the past, because of their size and potential speed, they've been very limited as to where they could run because of safety considerations.

This is no longer a problem. Special Promotions, the outfit that organized the 1987 Street Machine Nationals in English town, New Jersey, also arranged a 1/4-scale drag race exhibition using the same track as the big boys use. This attracted a lot of attention from spectators who've never seen the likes of a 1/4-scale R/ dragster.

Bob Vansciver, owner and "Grand Pubah" of the Atco Raceway in Atco, New Jersey has even gone so far as to modify the timing system that's used by the full-scale cars, so allowing the 1/4-scale cars to run on his track. The cars' ETs and top speeds will even light up the boards at the end of the run! Bob tells us that he's in the process of putting together a regular schedule that will allow the fans of 1/4-scale to run their cars on the track every week. Because the 1/4-scalers will be using the same timing system as the full-scale cars, they'll also be able to run eliminator-type racing. Even with a busy schedule of full-scale dragster races, Atco Raceway will be the host of the Pacesetter 1/4-Scale National in May of 1988!

So if you're frustrated by having to eat the dust of the \$1,000 off-road cars, give

(Continued on page 119)

OFFICIAL CAR OF THE YEAR BALLOT

Now is your chance to vote for your favorite R/C Car. We want you, the reader, to let us know which is the most popular car. Any type, scale, power, 2WD and 4WD—all are fair game, just as long as they're radio-

controlled. The winning car will be featured in our special 1988 *Radio Control Car Action Yearbook* available this spring at your favorite newsstand or hobby shop. R/Cers, cast your ballots!

My favorite R/C car is the _____

MAIL TO:

R/C Car Action Car of the Year Contest, 632 Danbury Rd., Wilton, CT 06897.

Deadline: March 1, 1988.

DRAG RACING

(Continued from page 116)

drag racing a try. No matter what your particular forte may be—top fueler, funny car, pro stock, etc.—R/C drag racing has it all.

You can run anything from a 1/24-scale Tamtech* car, to a 1/4-scale top fueler with a chainsaw engine. As long as the track has a lighting system that will run eliminators, you can pair up with any racer in the field and still give him a run for his money. Further, you don't have to own an R/C dragster to participate. You can run an off-road car with street tires, an asphalt car, or even a home-built car of your own design.

**The following are the addresses of the companies mentioned in this article:*

Universal Hobby and Supply, 7021 Municipal Drive, Orlando, FL 32809.

Tamtech: MRC Tamiya, 2500 Woodbridge Avenue, Edison, NJ 08817. ■

WCM SPRINT

(Continued from page 89)

arm, torsion bar, and bird cage bearing on each side. Each point absorbs multidirectional forces that allow the car to be

perfectly balanced throughout each turn, making it virtually impossible to roll and extremely easy to handle. The Jacob's ladder makes up the 5th or odd point of contact to the right, rear axle. It not only functions as a stabilizing point but doubles as the rear alignment tool for the chain drive system. The rear torsion arms are connected to the frame by RC 10 Associated oil-filled shocks, which are considered to be the finest performers.

After installation of sprocket, bilateral bird cages and rear hubs, the axle is connected to the frame at all five points.

Front axle assembly follows. The main front axle is pre-chromed. It too is a free-floating axle connected by two RC 10 shocks and three radius arms. Next, it's time for the engine installation. Because the engine comes fully assembled and ready to race, the carburetor, exhaust system and pre-installed motor mounting plates must be removed to install the engine. After positioning the engine, all mounts are re-installed as are the carburetor and exhaust. Just like the full-size race car, WCM sprinter's center of gravity

(Continued on page 122)



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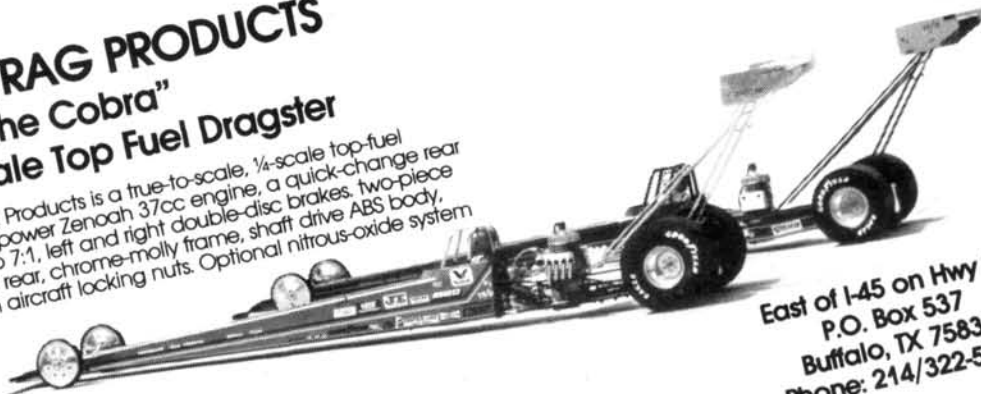
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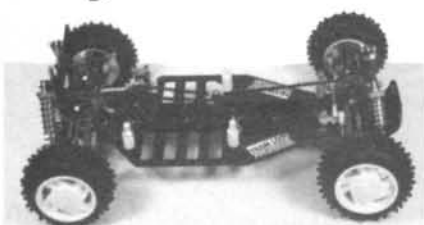
World's Fastest 1/4-Scale Top Fuel Dragster

The Cobra from Performance Drag Products is a true-to-scale, 1/4-scale top-fuel dragster. The kit features a 3-horsepower Zenoah 37cc engine, a quick-change rear end with ratios ranging from 1:1 to 7:1, left and right double-disc brakes, two-piece spun-aluminum wheels front and rear, chrome-molly frame, shaft drive ABS body, and stainless steel hardware with aircraft locking nuts. Optional nitrous-oxide system also available.



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The RPS/Yokomo C-4 inaugurates the new generation of four-wheel-drive, off-road race cars. Utilizing the latest in drive-train technology and innovative suspension designs, the C-4 is destined to become the ultimate off-road racing machine. The versatile design of the drive-train allows the car to be run either with or without front and rear differentials, one-way front hubs, or single, one-way front drive. The range of settings for the shocks, camber, etc., allows the racer to tune the C-4 to his personal driving style and track conditions.

For more information contact: RPS Distributing, 1655 E. Mission Blvd., Pomona, CA 91766.



MRC/TAMIYA

The Super Sabre kit includes a sleek, aerodynamic Lexan body, a sturdy chassis constructed of A.B.S. resin plastic, four-wheel independent suspension, oil-dampened coil-over shocks, front anti-roll bar, shaft drive, front and rear differentials, a three-step forward-and-reverse speed control, and a Mabuchi 540 motor.



The FW-11 1/10-scale Formula 1 on-road racer features a double-deck fiber glass reinforced plastic chassis, 3-point suspension, polycarbonate body, oil-dampened rear suspension, and sponge tires to really grab the road.

For more information contact: Model Rectifier Corporation, 2500 Woodbridge Ave., Edison, NJ 08817.



PARMA INTERNATIONAL

New from Parma is the peak detection converter that will convert any DC charger into a peak detector-type charger. No more timers or voltmeters to watch! This converter ensures a top "peak charge" every time.



Commutator cleaning sticks make motor cleaning a snap! By placing the sticks through the brush hood and rotating the armature, they clean and restore the commutator to a "just trued" shine—a "must" for the serious racer.



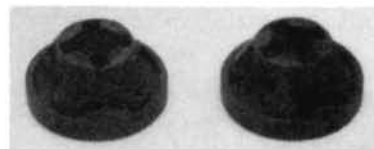
ASSOCIATED ELECTRIC

The new Ultra Series motors from Associated Electric are a collective effort of the Reedy and Yokomo motor labs. The new modified motors feature all-new, high-strength magnets, built-in brush heat sinks for durability and cooler running and a new can for greater magnet strength. These new modified motors are available for 1/10- and 1/12-scale on- or off-road racing.



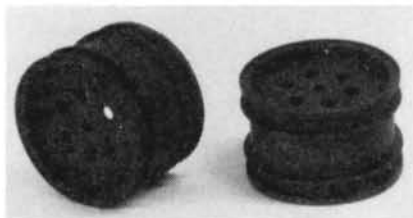
Associated Electric now offers a new body for the RC 10 called the Side-winder. This body is similar to the original RC 10 body, but has an additional molded-in wing on the front and small wings on the sides and roof. These create more downforce to keep the car on the track.

For more information contact: Associated Electric, Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626.

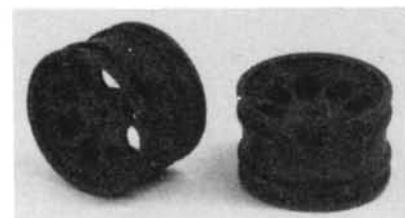


CUSTOM RACING PRODS.

This new wheel adapter allows you to mount low-profile Fox tires and rims to the rear of your RC 10. It works with stock Fox or CRP wheels and CRP Dynamite tires.



Kyosho wheels allow you to mount low-profile on all four-wheel-drive and two-wheel-drive Kyosho cars with stock hex drive hubs.



Hot Shot wheels are direct replacement wheels that will fit your Hot Shot, Super Shot, Hot Shot II, Boomerang, Big Wig, and Super Sabre. These wheels are molded of nylon which can be dyed.

For more information contact: Custom Racing Products, 3250 El Camino Real-B3, Atascadero, CA 93422.



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The Overnight Multicharger is capable of charging four Ni-Cd packs of up to 10 cells each in series simultaneously, including 7.2V and 8.4V Ni-Cd battery packs. The charger will plug into any 110V AC household outlet. A special feature allows adjustable charging rates, either 10mA, 25mA, or 50mA rates.

For more information contact: Polk's Modelcraft Hobbies, 346 Bergen Ave., Jersey City, NJ 07304.



McALLISTER RACING

The new Roadrunner 1/10-scale off-road single-seater body fits the RC 10, Schumacher Cat, and many others. This is a McAllister Racing original design, and not a copy of a stock body. A great combination of sleek aerodynamic shapes accommodating shock towers and chassis pans.

For more information contact: McAllister Racing, 4545-5H Industrial St., Simi Valley, CA 93063.



MCS PARTS WASHER

The MCS parts washer uses a high-capacity, enclosed circulating pump that's designed to clean everything from wheel bearings and differential tubes to motors and tires. The cleaner filters the fluid and runs on any 6- to 12-V DC power source. You can even use the parts washer to discharge your used batteries while cleaning parts for the next race. Comes with a secure lid so it can be transported without spilling. The wash tub measures 5 inches across and includes an on/off switch and battery connector. For more information contact: Norm's R/C Hobbies, 234 Farmers Branch Shopping Center, Dallas, TX 75234.



SUPERIOR RACING PRODS.

The serious driver can now fully use his skills with one of the premier cars in today's R/C competition—the SRP-1 from Superior Racing Products. The SRP-1 uses high-quality aircraft-grade materials and tolerances. Advanced engineering design is used to gain a predictable degree of toughness as well as ultra-close tolerances, making this a highly competitive R/C car. Another feature of the SRP-1 is that it comes pre-assembled. The car is assembled by key personnel who have over 30 years' experience with model airplanes.

For more information contact: Superior Racing Products, 2317 Linda Way, Santa Ana, CA 92704.



ON TRACK RACING PRODS.

The Pit Stop 1 field box from On Track Racing Products features a built-in test stand, a spacious drawer, over 700 square inches of work surface, and special locations with Velcro fasteners for the radio and charger. The compartment will accommodate 1/10- and 1/12-scale cars.

For more information contact: Or Track Racing Products, P.O. Box 250 Grand Rapids, MI 49588.

(Continued on page 139)

WCM SPRINT

(Continued from page 119)

is in front of the engine, exemplifying the true scaleness of the car.

The hood and fuel tank are molded

from ABS plastic and require minimal cutting and sanding before painting. Using a good-quality glue, glue the rear tank halves together and hold together with rubber bands for at least 24 hours before painting. Again, Imron is recommended

for all body parts.

Any 2-channel pistol-grip radio system can be installed in the car. The radio components need to be tie-wrapped and mounted on pre-cut mounting plates that are themselves tie-wrapped to the car chassis. The steering servo is connected directly to the left steering arm via a steering rod. The throttle servo acts as both brake and accelerator by connecting to a centrifugal clutch shield and carburetor assembly. The wheel, tire and body detailing are the final steps before the real excitement begins. All tires must be glued to the wheel rims with 3M Weather Strip Adhesive.

PERFORMANCE: The WCM sprinter measures 39x18 inches by 21 inches tall; its weight is 20 pounds. After adding the 50-to-1 gas-oil mixture through the car's unique quick-fill device, I headed for the track. My initial run was at WCM's own hard-surface Pandemonium Raceway in Buffalo, Texas, so I had the advantage of having the WCM Race Team as my pit crew. After switching the carburetor setting to the choke mode it took two quick pulls on the rope starter before the engine started.

Following the instruction manual, I went through a final systems check to

(Continued on page 124)



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WCM SPRINT

(Continued from page 122)

make sure the steering, throttle and brake systems were under control. I deliberately slowed my first couple of laps, braking frequently. As I got more accustomed to the car's quick responses, I became bold and started to accelerate more and brake less.

The car's muffler system bellows realistic roars from under the engine as the car speeds down the straightaway. Pandemonium Raceway is set up to run counter-clockwise, so all turns are hard left-handed. With its low center of gravity it

was easy to exploit the car's cornering ability. On the tenth lap, traction improved as the tires warmed, and the real test began. The car was fast and responsive and seemed to thrive on high speeds, but on lap 27 in the No. 4 turn I "overcooked" the turn and lost control of the car; the car veered head-on into a wall; I closed my eyes in despair. When I caught my breath, I ran to the crash site—all 27 hours of construction flashed before my eyes—and arrived to find that only a plastic rod end had snapped. Within minutes I was out of the pit area and back-sliding through each banked turn

and flying down the straightaway. As the day wore on, more and more competitors began racing their sprinters too, but my WCM car was faster and more durable than the others.

Additional advantages to owning the WCM sprint car are that each customer is given a direct-technical-assistance phone number for any questions, problems or part-ordering, and each month receives WCM's informative newsletter about technical advances, races, parts, and photographs of various racers with their finished sprint car. WCM also manufactures a 1/4-scale stock car and as we speak is producing a dragster and Pro-Stock Drag Car.

So if you want to get involved in this exciting level of R/C car racing and want the ultimate driving machine, try the WCM Sprint Car.

**The following is the address of the manufacturer mentioned in this article:*

WCM Corp., Rt. 2, Box 207A, Buffalo, TX 75831. ■

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2. Motors: \$80 R.O.A.R. legal
3. Weight: open
4. Bodies: Grand National only
5. Batteries: R.O.A.R. legal, no cell limit
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8. Decals: all cars must be NASCAR detailed

Look for more details in the April issue of RADIO CONTROL CAR ACTION.

For more information you may contact Lake Whippoorwill Speedway at 12345 Narcoossee Road, Orlando, Florida 32827 (305 277-9586).

1/6 FUNNY CAR

(Continued from page 33)

car runs on a 220-foot track.

The basic kits cost \$995 and can be assembled in two or three days. Instructions are fully illustrated. The quantity produced will depend on demand.

Initial information on development and production dates is available through Hobby House*, a leading hobby retail outlet in the Southern California area, and Andy's Hobby Shop*, another great hobby retail outlet on the east coast.

**The following are the addresses of the companies mentioned in this article:*

MK Engineering/Aeromarine Laminates, 77 Cedar St., Babylon, NY 11702.

Hobby House, Inc., 17721 Vanowen St., Reseda, CA 91335.

Andy's Hobby Shop, 36 East Main Street, Elmsford, NY 10523. ■

GRUMPY JENKINS

(Continued from page 27)

and besides messing up the paint job, it restricts front suspension travel. A pair of You-G front shocks is worth the added expense, because there is no rod extension out of the top, and they are adjustable. Try to eliminate as much down-travel past neutral as possible, even if it means trimming a little bit off the bottom of the piston rod. Hard acceleration will cause

the steering to become light as the nose tries to lift and, if the wheels decamber, you'll have a real thrill if you have to make steering corrections as the car goes down the strip. At full speed in the end of the scale quarter (132 feet) a decambered front wheel will try to tuck under the car in even a slight turn, and it will flip over. Don't make the front end too stiff; just get rid of unnecessary down-travel. Also, get the alignment as straight as you can. If the front end bushings or steering parts are worn and sloppy, fix them now.

Don't even *think* of using off-road tires for pavement drag racing, or you'll get your doors blown off the first time you run some car that's halfway set up. Skinny tires are OK on the front, as long as you've got adequate steering control. Real drag cars use them because there's less rolling resistance than with a wider tire. The back tires should really be slicks, and the mounted sponge slicks available for the Tamiya cars from Twinn-K* are great for the price.

Make sure that any tire you choose is securely glued to the rim, as starting-line traction and top-end centrifugal force will cause a poorly attached tire to slip or come off. Tire problems on the end of the run will surely cause handling problems,

especially since drag race cars are not set up with a low center of gravity. "Grumpy's Toy" used a Le Mans 360PT motor that developed a lot more torque than the stock motor, so I used a set of 1/8-scale tires and rims in an effort to obtain more traction off the line. These required some modification; they stuck out too far past the body and required grafting to a Tamiya hub. By cutting about 3/4 inch off the outer part of the rim and letting the tire hang off the inside, the big slicks just fit inside the fenders, and just cleared the suspension.

The centers of a pair of old Tamiya

Sand Scorchers rims were cut down to the tapered hub portion with just enough of the spoked part left to include the five lug bolt holes. By letting the tapered hub find its own center in the 1/8-scale rim center hole, the five lug bolt holes may be drilled using the Tamiya hub as a pattern. If you're reasonably careful and use a little common sense, this is pretty easy to do, and the results are perfect. By the time this is in print, there will probably be other sources for ready-made 1/10-scale jumbo slicks.

With this much done, you can begin

(Continued on page 127)

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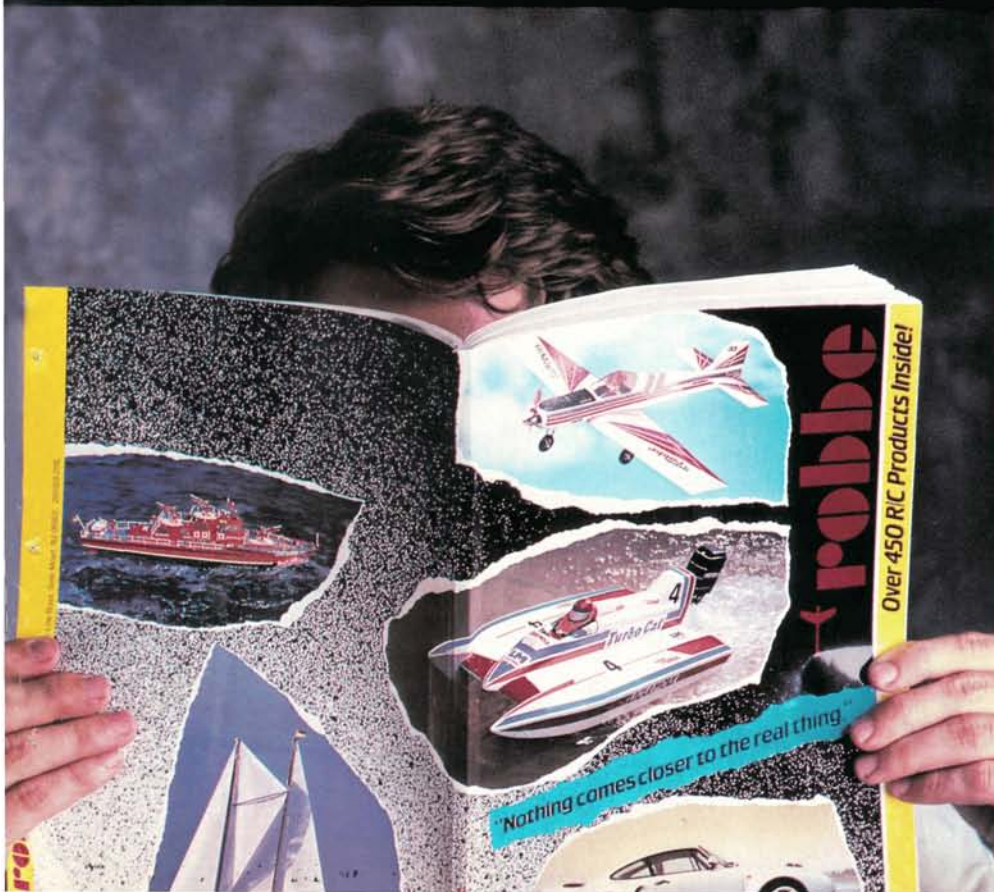
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GRUMPY JENKINS

(Continued from page 125)

setting up the car for drag racing. In the stock chassis configuration you'll probably find that there's plenty of wheelspin on acceleration. If you didn't use the white-letter tires which allow you to see the tire spinning, you can put a white mark on the tire with paint or china marker just like the real drag racers do to observe the wheelspin condition.

By relocating some of the heavier components to the rear (such as moving the receiver battery pack to the rear body mount crossmember, and relocating the receiver to the empty battery tray) more weight will be applied to the rear for better traction.

A custom-made Ni-Cd arrangement can be used to gain even more weight bias, but things can get out of hand. Too much weight transfer will cause wheelies, and a really "squirrely" car on top end, so use some judgment here. Sure, wheelie bars look neat, and they *do* work, but you still need to steer the car. If they're not put on perfectly straight, they'll do their own steering too.

If you're using a Grasshopper/Hornet-type chassis, you've probably noticed by

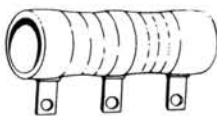
now that every time you nail the throttle, the rear end jumps up and aggravates the wheelspin problem. This is easily cured with a set of bolt-on traction bars. They are very similar to their full-size counterparts, and they also work the same way by letting the rear axle twisting action try to lift the whole car up. In normal bump action, the rear axle works the same as long as you leave a little gap between the snubber and the chassis, but on hard acceleration the bars try to rotate upward, and all the weight is on the rear end. If the front suspension is set loose enough,

you'll see the action very clearly as the car seems to jump off the line. Even a stock car will run in the low 7-second bracket, so a couple of tenths gained by a good "hole shot" could be enough to put your competition on the trailer.

By now, you've invested a lot of time in your car, so take it easy, and work up gradually to full-bore passes through the quarter. You can mark off your own dragstrip easily by taking a roll of kite string or twine, tying a heavy fishing sinker or bolt to the end, measuring off 132 feet and marking this spot on the

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string. In an unused parking lot or an empty street, draw a chalk line, lay the weight on it, unroll the string until you get to the 132-foot mark, and draw another chalk line. Make sure you've got enough room for the car to coast to a stop, because any attempt to use motor braking will probably cause a spin-and-roll at the speed it will be traveling. Practice leaving the starting line until you can keep the car straight, then gradually work your way up to full-throttle passes. Don't be afraid to

experiment a little with weight and tires, and maybe a 7- or 8-cell battery pack.

Can't find any competition? Try going to where the full-size street machines hang out. You might find some R/C cars lurking in some of their trunks—you can't get busted for drag-racing a model car! I attended the Street Machine Nationals at Englishtown, NJ, last August, and they were drag racing *model cars* out on the track, using the "Christmas tree" and Chrondek timers! It was also a great place to get some ideas. Shouldn't be too long before there are R/C drag meets just

like other forms of model car racing, sanctioned by the EHRA...the Electric Hot Rod Association. Can you dig it?

**The following is a list of manufacturers referred to in this article:*

Parma International, Inc., 13927 Progress Pkwy., N. Royalton, OH 44133.

MRC/Tamiya, Model Rectifier Corp., 2500 Woodbridge Ave., Edison, NJ 08817.

Diamond P Video, 21130 Costanzo St., Woodland Hills, CA 91364.

Pactra, 410 N. Michigan Ave., Rm. 1280, Chicago, IL 60611.

Top Flite Models, 2635 S. Wabash Ave., Chicago, IL 60616.

Autographics of California, 1700 14th Bakersfield, CA 93301.

Twinn-K, Box 31228, Indianapolis, IN 46231. ■

HOT SHOT II

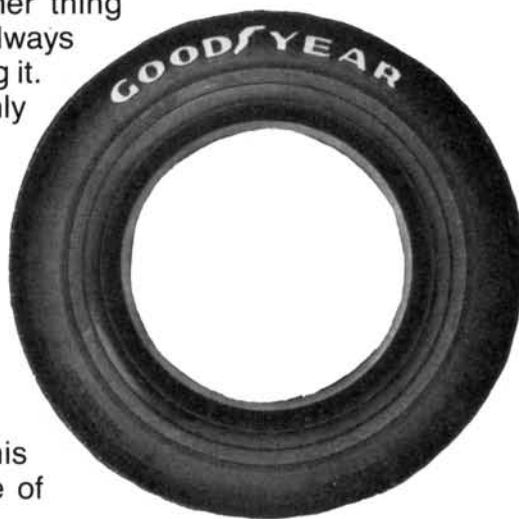
(Continued from page 102)

Also new to the Hot Shot II chassis is a skid plate under the battery pack to protect it from damage.

The last, but not least, improvement the resistor for the speed control. The old resistors on the Hot Shot were ceramic poured in an aluminum cup. This was an innovative attempt at disguising the resistors, but the aluminum wouldn't allow

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enough heat dissipation, which caused the resistors to burn out. The Hot Shot II uses the same 3-prong resistor that has been used for years on many Tamiya kits with a great deal of success, providing you don't run a full-blown modified motor. The speed control remains the same, and up until now, I haven't had a problem with it.

ASSEMBLY: Assembling the Hot Shot II is very much the same as the original Hot Shot. The construction process begins with the installation of the radio gear in the lower chassis. The radio system I chose to use for the Hot Shot II is the Futaba* Magnum Jr., not only because it would fit, but because it works reliably—this same radio system has made its way through more than six car reviews without a single failure. The lower chassis assembly is then put aside, and the front and rear differentials and housings are assembled followed by the suspension components.

Once the front and rear assemblies are completed, they are attached to the upper part of the two-part chassis. The second half of the chassis, containing the radio gear, is then attached. Once the two chassis halves are attached, the only steps that remain are assembling the roll cage and bumper, mounting the tires on the

wheels, and the painting of the body.

All told, the process is rather time consuming compared with some other kits due to the very high number of parts involved. Case in point is the means of attaching the motor. Prior to attaching the motor to the rear-end assembly, it is fitted with a stud and motor plate. The motor is then placed in the rear end assembly and fastened with a screw and section of tubing to support the gear box when the screw is tightened. This screw acts as a pivot point for the motor to accommodate different size pinion gears. The stud that is attached to the motor passes through the

chassis opposite the pivot screw into an elongated hole, in my case with a 15-tooth pinion, then two metal shims must be placed on either side of the stud to hold it in place. Then a bolt and plastic retainer are placed on the stud to hold the motor and shims in place.

All together there are ten parts (not including the pinion gear) needed to hold the motor in place compared with two screws on some other kits. It is not a difficult operation at all because of the quality of the instruction manual. My only concern is that when changing pinions at the track to tune in your car,

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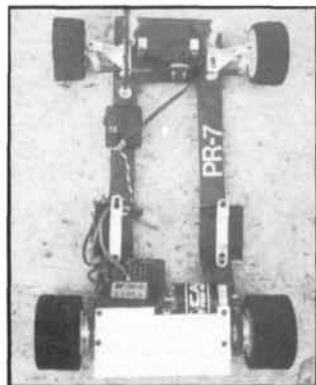
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HOT SHOT II

some of these shims may be lost, thus sidelining your car for the day. This system is not all bad. As a matter of fact, it's rather helpful to the beginner or someone who is unsure of the proper clearance required between the pinion and spur gears.

Even with the high number of parts, the Hot Shot II went together without any problems at all because of the quality of the parts. As I had mentioned before, my concern is the time needed to complete

the kit, and the possible loss of parts during repair or adjustment.

PERFORMANCE: Prior to running the Hot Shot II, I performed all the regular safety checks, then headed for the track. After running a couple of slow laps to try to get a feel for the car, it was time for a full-tilt solo run. Because of the Hot Shot II's lighter weight (about 70 grams lighter than the Hot Shot), and the Black Endurance motor I used in place of the stock motor, the car was able to move down the straights at a pretty good clip. Going into the turns, the Hot Shot II tracked very well with the exception of a little sliding,

which is mostly due to the hard compound oval block pattern tires included in the kit. A nice set of soft compound spikes would do the Hot Shot II a great deal of good.

Going over the jumps and whoops is where the suspension improvements are really evident. The old Hot Shot has a tendency to drag its tail after clearing a jump—which would slow the car down. The new suspension on the Hot Shot II will give enough to take up the shock of landing, but in most cases, the chassis will not bottom out. My only complaint is with the changes in front end alignment when the suspension is compressed. Under compression, the tires take a hard toe-out attitude which will slow the car down. Other than these two quirks, the solo run was quite a success.

The next step was to run the Hot Shot II in a little traffic (not on the local highway, at the off-road track). Coming off the starting line, the Hot Shot II was able to keep pace with the rest of the cars in the heat. Going into the turns the competition had the edge on me, partly because of the hard compound tires allowing a little slide, but my biggest disadvantage was that my speed control, the stock unit, was not equipped with a brake. Many of the other cars in the heat were using electronic

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speed controls with brakes. The end result was that I would have to slow down sooner and take a wider turn than the rest of the field, and that cost me enough time to let two cars past at the end of the race.

A third-place finish is not at all bad when considering that my competition had the advantage of using electronic speed controls and the time to tune their

chassis. But there are a few items I think would push the Hot Shot II closer to the front of the pack: a set of ball bearings to replace the loose plastic bearings on the wheels, a high-performance stock replacement motor, and a good wiper or electronic speed control with brakes. With these few improvements, along with the ones made by Tamiya, the new Breed of

Hot Shot should be much more of a threat to the competition than ever before.

**The following are the addresses of the manufacturers mentioned in this article:*

MRC/Tamiya, 2500 Woodbridge Avenue, Edison, NJ 08817.

Futaba Corp. of America, 555 W. Victoria St., Compton, CA 90220. ■

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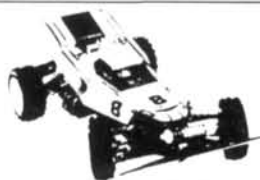
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1/10 FUNNY CAR

(Continued from page 62)

shorter than a 1200mAh cell. It will help to reduce weight for drag racing purposes, but produces the big voltage numbers (horsepower) that a Funny Car needs.

In the test car we ran a standard 7-cell setup and then ran a 14, 1/2 sub-C setup to give you a comparison and prove a point about extra voltage without added weight.

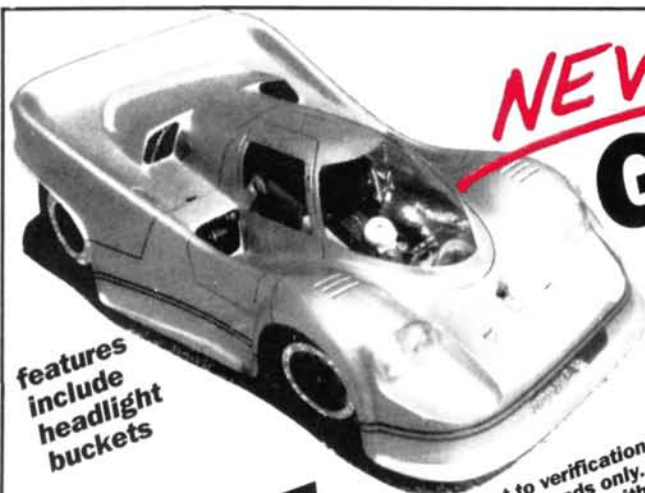
The following items were installed in the Advance Funny Car Drag: the Nova R/C Products* 18-I electronic speed control, a Black Magic modified motor from R/C Research Engineering*, and the entire system was powered by

Sanyo matched cells (either standard sub-C cells or 1/2 sub-C cells). The Black Magic motor in the test car was a quad wind which was not designed for drag racing. The optimum wind would probably be a triple wind, but I hoped that by getting the final gear ratio of the Draggin high enough I could make up for the torque that this motor lacks. The standard gear ratio provided with the Advance Funny Car is a final 8.14-to-1, but by changing the jack-shaft pulley from the standard 28-tooth to the optional 32-tooth the final gear ratio was raised to 9.30-to-1 and this is the ratio used on our test runs.

As there are no formal drag strips available nearby, we set up our own in an empty parking lot. The running surface

wasn't ideal, but it did provide a reasonably flat, level 132 feet on which to run drag cars. Our other major concern was how we should time the runs. The only foolproof way is to have an electronic eye and "Christmas tree" system like the big boys, but when you're just getting drag racing started in your area the cost is prohibitive. The answer might be what Marshall-Browning International* has to offer—the Acutrak speed chronometer. This versatile unit is offered in both a hand-held and a wrist watch version. It will compute the run time and the actual miles per hour down to a hundredth of a second in run time, and the thousandth of a mile per hour—not bad for a manual unit. It's so easy to use

(Continued on page 134)



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1/10 FUNNY CAR

(Continued from page 132)

that a youngster can operate it. Yes, there is a possibility of human error but you can't beat the versatility of the Acutrak — you can't afford an electronic timing system.

As explained earlier, the battery setup for the first series of five runs was with a 7-cell (standard C-cell) setup. The runs were from a slow 4.4 seconds at 20.31mph to a fast 3.51 seconds at 25.07mph. I thought this was quite good since the running surface was so rough that it scraped the body of the Funny Car occasionally, and a brisk crosswind was blowing across the test site.



The next step in the test was to install the 14, 1/2 sub-C cells. A word of caution. If you *do* use this much voltage in your drag car, make sure you have enough voltage-dropping diodes installed be-

(Continued on page 136)

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1/10 FUNNY CAR

(Continued from page 134)

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ment was from a slow run of 2.99 seconds at a speed of 30.201 mph to a top run of 2.78 seconds at 32.374 mph.

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top dog? Maybe you! Let's put the pedal to the metal, smoke 'em up and go drag racing.

**The following are the addresses of the companies mentioned in this article:*

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Nova R/C Products, 851 N. Hacienda Blvd., La Puente, CA 91744.

R/C Research Engineering, 823 Ricket Rd., Unit 15, Brighton, MI 48116.

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WHAT'S NEW

(Continued from page 121)



The Challenger 250 and 260 pistol-grip radio systems share the same technology and have sprung from the same philosophy—the best for less. Using the same dependable circuit boards, transmitters and receivers, the 250 and 260 feature extended transmission ranges, servo-reversing, and built-in Battery Eliminator Circuitry. Both radio systems available on 75MHz only. For more information contact Polk's Model Craft Hobbies (346 Bergen Ave., Jersey City, NJ 07304).



Team Losi, the leader in high-quality, machined gears for R/C racing, now offers a full range of 48-pitch gears designed specifically for 1/10-scale off-road cars. The 48-pitch design offers the durability of a 32-pitch gear, and the efficiency of a 64-pitch gear. Pinions are available with 14 to 30 teeth, and spur gears are available with 78 to 86 teeth.



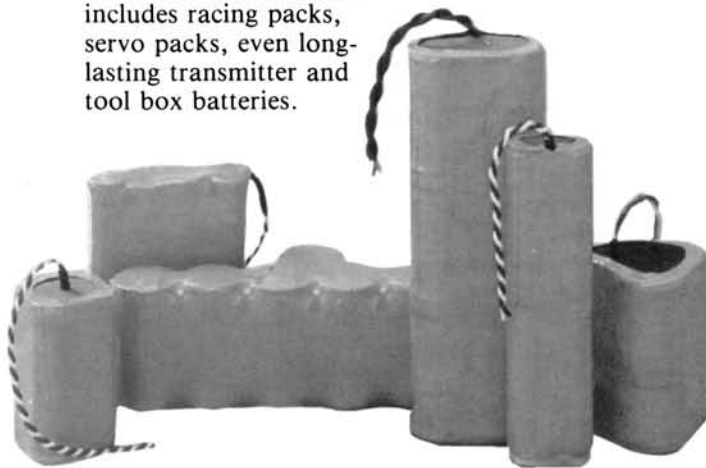
The new Parma discharge resistor has a bulb attached to make battery care easier than ever. In addition to a controlled resistance discharge, the lamp gives a visual indication on the charge remaining in your batteries.

For more information contact: Parma International, 13927 Progress Pkwy., N. Royalton, OH 44133.

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